The first national investigation into asthma deaths reveals deficiencies in risk assessment, prescribing and clinical care. Implications for practice are outlined.

Avoidable asthma deaths: national audit results

In this article...
- Findings of the National Review of Asthma Deaths
- Analysis of prescribing and clinical care of those who died
- Implications for practice

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Abstract


Why Asthma Still Kills: the National Review of Asthma Deaths is the first national investigation into this problem. Asthma deaths were identified through national databases; extensive information on each death was sourced and multidisciplinary expert clinical assessors were recruited to expert panels to review it. Data was available for analysis on 195 people who died as a consequence of asthma during the period under review. This article focuses on the findings of the review and its implications for practice.

Significant morbidity is associated with poorly controlled asthma. Asthma UK (2013) reports that 5.4m people in the UK are receiving treatment for asthma. There are significant levels of primary care consultations, emergency care and hospital admissions for uncontrolled asthma in the UK (Royal College of Physicians, 2014). Asthma mortality in the UK has fluctuated over the years but remains one of the highest in Europe (RCP, 2014).

Numerous studies have been published reviewing mortality and the risk factors relating to asthma deaths from preventable causes. The earliest study took place in the 1960s (Speizer et al, 1968); since then, many confidential enquiries into asthma-related deaths have been carried out around the world (Anagnostou et al, 2012; Barton et al, 2005; Harrison et al, 2005; Bucknall et al, 1999; Wareham et al, 1993; Sears et al, 1985; British Thoracic Association, 1982; Fraser et al, 1971). Methodological limitations of these are recognised: most importantly they are, by definition, retrospective and, to a large degree, observational. Nevertheless, they identify common themes relating to acute or long-term care and patient/carer awareness.

The UK’s landmark National Review into Asthma Deaths (NRAD) was commissioned by the Healthcare Quality Improvement Partnership on behalf of NHS England, NHS Wales, the Health and Social Care Directorate of the Scottish Government, the Department of Health, and the Northern Ireland Department of Health, Social Services and Public Safety. It was undertaken by a consortium of asthma professionals and patient bodies, led by the Royal College of Physicians.

Aim

The aim of the review was to build on previous confidential enquiries into asthma deaths that have taken place around the UK to provide a robust body of evidence to help understand how these events arise and how they might be avoided in the future.

Method

From 1 February 2012 until 30 January 2013, every death recorded from asthma in the UK was systematically reviewed and subjected to an in-depth enquiry to confirm whether asthma was the primary cause of death (RCP, 2014). The circumstances surrounding the deaths were subjected to a detailed review by multidisciplinary teams. During the study period, notifications with asthma on their death certificate were...
Asthma reviews (n=135) were unstructured and what was assessed varied:
- 37 (27%) included an assessment of asthma control
- 57 (42%) dealt with medication usage
- 96 (71%) checked inhaler techniques
- 33 (24%) included a personal asthma action plan

Findings

The findings were used to:
- Identify avoidable factors surrounding asthma deaths in the UK.
- Make recommendations to improve asthma care and patient self-management.

Demographics

Of the 195 people included in the enquiry, the age at death was recorded for 193. Of these, 28 (15%) were aged 19 years or below and 83 were aged 20-64 (43%) years, with the remaining 82 (42%) aged over 65 years. Body mass index was available for 121/195 cases; 30 (25%) of these were overweight and 38 (31%) were obese or very obese. In total, 39 of the 195 (20%) were current smokers and a further 16 had been exposed to secondhand smoke.

Where the information was provided, 84 (44%) had psychosocial or learning disability factors recorded in their medical records. For 26% of these patients, psychosocial factors were considered a risk factor.

Asthma severity

The level of asthma severity was estimated and of 155 out of 195 patients for whom severity could be estimated:
- 61 (39%) appeared to have severe asthma;
- 76 (49%) appeared to have moderate asthma; and
- 14 (9%) were being treated for mild asthma.

In the remaining four patients, the first attack was the final attack so severity was not assigned. The report concludes that many patients who were treated as having mild or moderate asthma had poorly controlled asthma that was undertreated, rather than a condition that was truly mild or moderate.

Number of deaths

There were 12-17 deaths per month, with the exception of March when there were 30 deaths. Eighty-seven of the 195 (45%) people died without seeking medical help or before emergency care could be provided. Of those who died, 21% (40/195) had attended a hospital emergency department for their asthma at least once in the previous year and, of these, 23% had attended twice or more. In total, 19 (10%) people died within 28 days of discharge from hospital.

Clinical care

General practice details were returned for 138 (71%) of the patients who had died of asthma. Asthma reviews were performed by GPs in 78 (57%) of 136 practices, by GPs with a respiratory interest in three practices (2%), by nurses with an asthma diploma in 82 (60%) and general practice nurse in 62 (46%). The quality of routine care was assessed as inadequate in 62% of cases (Box 1) and a lack of specific asthma expertise identified in 17% of cases.

There was evidence that 135 (69%) of those who died received a routine asthma review in general practice, with 111 (57%) having a review in their last year of life. Routine asthma appointments were missed by 42 (22%) of patients in the year before death. Attempts were made to follow up 23 (55%) of these patients, with no record being found of attempts to contact the other 19 (45%). There were 83 patients who were under secondary care specialist supervision, of whom 54 (65%) had no record of a hospital asthma review from the previous 12 months.

Prescribing

Based on recommendations from national guidance (British Thoracic Society and Scottish Intercollegiate Guideline Network, 2012) avoidable prescribing factors were identified in 47% of cases managed in primary care. These included overuse of short-acting reliever inhalers (SABAs). The underuse of preventer medications, such as inhaled corticosteroids (ICSs), was also identified. To comply with normal prescribing recommendations, most patients would usually need at least 12 preventer prescriptions per year. Out of 168 (86%) patients on preventer inhalers at the time of death, either as a standalone treatment or in combination with something else, the number of prescriptions was known for 128. Details of the number of ICSs issued are set out in Box 2.

Five patients were using a long-acting beta-agonists (LABAs) without concomitant ICSs. Such a practice is outside the product licence for LABAs and also outside national guidance recommendations.

The report concludes that low repeat prescriptions for preventer medications for ICSs as a standalone medication or in combination with a LABA were widespread. SABAs were overprescribed.

Implications for practice

Overall, avoidable factors relating to the assessment and recognition of risk were identified in 51% of cases and not acted on by the clinician, patient or carer. Primary care clinicians had failed to adhere to BTS/SIGN guidelines (2012) in 59% of asthma deaths.
**BOX 3. ASTHMA REVIEW**

Clinicians conducting reviews should:
- Assess asthma control by:
  - Using the Royal College of Physicians three questions (see right);
  - Measuring peak flow
  - Identify risk factors
  - Check medication adherence
  - Check inhaler technique
  - Optimise treatment
  - Provide/update personal asthma action plan
  - Arrange follow-up appointment
  - Give patient advice on healthy living if appropriate

**Royal College of Physicians three questions**
In the past week (or month)
- 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 (for example housework, work/school and so on)?

From: www.rcplondon.ac.uk/publications/measuring-clinical-outcome-asthma

**Staff protocols**
Within every general practice and hospital, there should be a named clinician who is responsible for maintaining asthma standards. The training needs of clinicians responsible for assessing and monitoring people with asthma should be assessed to ensure competency, with additional training and updating undertaken.

Half the deaths identified occurred during “surgery hours”. Protocols should be put in place for all practice staff, including reception staff, to ensure that patients with deteriorating asthma are allowed prompt access to advice, assessment and treatment.

There should be prompt and effective communication between the hospital and general practice to ensure primary care follow-up within two working days following discharge from hospital or emergency department.

**Review, treatment and prescribing**
The elements that each asthma review should contain are outlined in Box 3. These reviews should be conducted by clinicians who are trained in asthma care and can recognise patients at high risk.

Recognising such patients must include being able to understand the significance of concurrent psychological, social and mental health issues. Structures should be in place to create a risk profile for patients and to ensure a treatment plan is appropriate to that risk profile.

NRAD recommendations include the development of a standard national asthma template to improve the quality and documentation of asthma reviews. This would also facilitate local and national asthma audits.

Mechanisms should be in place to identify and review patients who are using more than one SABA inhaler per month. LABA inhalers should not be used as sole therapy; if the use of a LABA is clinically indicated, an ICS/LABA combination should be prescribed. Concordance with ICSs or ICSs/LABAs should be closely monitored. There should be electronic surveillance of prescribing in primary care.

**Patient contact**
Practices should proactively identify and contact patients who fail to attend routine asthma appointments. The methods of contact could include:
- Clinician-led telephone consultation;
- Personalised letter;
- Alerts on prescription system;
- Opportunistic reviews;
- Major alerts on practice computer screens.

Patients should be supported to self-manage and written personal asthma action plans should be provided for all patients and parents, along with a clear explanation of how to recognise and respond when asthma control deteriorates. Patients should be taught to recognise when they should seek urgent care. Key advice that should be given to patients is outlined in Box 4.

**Event analysis**
There appeared to be a lack of critical event analysis for all but 12% of the deaths; of this 12% of analyses, only 38% were deemed to be of sufficient quality for reflective learning. It is recommended by RCP (2014) that all deaths thought to be due to asthma should be subject to a local critical event analysis. The enquiry also identified significant issues with the accuracy of death certification, with particular regard to differentiating between asthma and chronic obstructive pulmonary disease.

**Conclusion**
A number of important deficiencies in asthma care have been identified though the RCP (2014) review. Health professionals should critically review their practice for “routine” care and ensure they can recognise when a patient is deteriorating. They should also aim to empower patients and parents/carers to self-manage asthma.

**References**

Asthma UK (2013) Asthma Facts and FAQs. tinyurl.com/asthmaFAQs.


