The UK has one of the highest rates of asthma and asthma deaths in the world. Up to 5.4 million people in the UK are currently treated for asthma and there were 65,316 hospital admissions in 2011/12. The frequency of asthma deaths has been falling since the turn of the century in all age groups except children under nine and adults over 75 (see Figure 1). However, it is reasonable to ask why anyone should die from asthma in an era of effective medication and evidence-based management guidance.

In the year ending 31 January 2013, the National Review of Asthma Deaths (NRAD) identified 195 deaths attributable to asthma. In 62 per cent of those deaths overall quality of care was found to be inadequate suggesting that 121 could have been avoided.

**Background**

In the 1960s, an epidemic of asthma deaths was blamed on the use of nonselective beta-agonist bronchodilators. Since then, enquiries have ‘repeatedly identified potentially avoidable factors that preceded most asthma deaths’. NRAD’s report, *Why asthma still kills*, finds no single factor that accounts for the majority of deaths. Instead, ignorance, shortcomings in management and lack of an overview continue to take their toll.

The Royal College of Physicians (RCP) was commissioned to conduct the enquiry by the Healthcare Quality Improvement Partnership (HQIP) on behalf of the NHS organisations in the four home countries. It is the first national study of asthma deaths and the largest of its kind worldwide, drawing on data from primary, secondary and tertiary care, as well as ambulance paramedic and out-of-hours care providers. Its primary aim was ‘to understand the circumstances surrounding asthma deaths in the UK, in order to identify avoidable factors and make recommendations for changes to improve asthma care as well as patient self-management’. The findings were considered in light of published evidence and the report is fully referenced.

A consensus on good standards of care by which cases could be assessed was developed by a multidisciplinary steering group (for example, patients...
prescribed more than six reliever inhalers in the previous 12 months should also be on preventer treatment; patients who have been treated for an asthma attack should be prescribed regular inhaled corticosteroids).

Deaths for which asthma was certified as the underlying cause were identified from death certificates and the patient’s medical records were reviewed by a multidisciplinary panel to confirm the presence of asthma, its role in the death and the factors involved.

Of 3544 deaths for which asthma was mentioned on the death certificate, asthma was a possible cause in 900. Of these, information was not available for 272 and asthma was excluded in 352. From the remainder, the review panel identified 195 cases in which asthma was definitely the cause of death. About two-thirds of deaths were in adults who were diagnosed after age 15 (median 37); further research is needed to determine whether late-onset asthma is a risk factor for asthma death.

**Process of care**
The quality of routine care was found to be inadequate in 62 per cent of cases. Lack of adherence to management guidelines was common in both primary care (59 per cent of all cases) and secondary care (23 per cent), with the most frequent failings being lack of an adequate review and a personal action plan. Asthma control was assessed at the last review in only 19 per cent of patients in primary care and six per cent in secondary care.

Overall, the enquiry found that ‘several aspects of asthma care fell well below expected standards for 51 (26 per cent) of those who died and the management of the fatal asthma attack was inadequate for 49 (25 per cent) of them’. Other factors included inadequate or delayed risk assessment, failure to administer emergency medication promptly, and inadequate management after previous hospital discharge.

**Prescribing**
The enquiry found a high level of poor prescribing. Its consensus process suggested that an appropriate level of prescribing for inhalers would be 12 devices per year, on the basis that each device lasts about a month. Thirty-nine per cent of people who died had been prescribed more than 12 short-acting bronchodilators (SABAs) in the preceding year; six had been prescribed more than 50 SABA inhalers.

Information about inhaled steroids was available for 128 people. Of these, 80 per cent had been prescribed fewer than 12 inhalers (single or combined) in the preceding year; six had been prescribed more than 50 SABA inhalers.

**Table 1.** Proportion of patients with potentially avoidable prescribing factors in primary and secondary care

<table>
<thead>
<tr>
<th>Prescribing factor</th>
<th>Primary care (n=195)</th>
<th>Secondary care (n=83)</th>
</tr>
</thead>
<tbody>
<tr>
<td>any avoidable prescribing factor</td>
<td>47</td>
<td>14</td>
</tr>
<tr>
<td>did not prescribe appropriate medication</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>did not prescribe in accordance with guidelines</td>
<td>26</td>
<td>7</td>
</tr>
<tr>
<td>overprescribed SABA</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>prescribed LABA as monotherapy</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>prescribed inappropriate dose of inhaled steroid</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>prescribed inappropriate dose of other medicines</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>did not offer preventative treatment</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>did not check inhaler technique</td>
<td>23</td>
<td>12</td>
</tr>
</tbody>
</table>

**Table 2.** Recommendations relating to asthma medication

- All asthma patients who have been prescribed more than 12 short-acting reliever inhalers in the previous 12 months should be invited for urgent review of their asthma control, with the aim of improving their asthma through education and change of treatment if required.
- Electronic surveillance of prescribing in primary care should be introduced as a matter of urgency to alert clinicians to patients being prescribed excessive quantities of short-acting reliever inhalers, or too few preventer inhalers.
- Nonadherence to preventer inhaled corticosteroids is associated with increased risk of poor asthma control and should be continually monitored.
- An assessment of inhaler technique to ensure effectiveness should be routinely undertaken and formally documented at annual review, and also checked by the pharmacist when a new device is dispensed.
- The use of combination inhalers should be encouraged. Where long-acting beta agonist (LABA) bronchodilators are prescribed for people with asthma, they should be prescribed with an inhaled corticosteroid in a single combination inhaler.
- Patients with asthma must be referred to a specialist asthma service if they have required more than two courses of systemic corticosteroids, oral or injected, in the previous 12 months or require management using British Thoracic Society stepwise treatment four or five to achieve control.
- Parents and children, and those who care for or teach them, should be educated about managing asthma. This should include emphasis on ‘how’, ‘why’ and ‘when’ they should use their asthma medications, recognising when asthma is not controlled and knowing when and how to seek emergency advice.
- Patient self-management should be encouraged to reflect their known triggers, eg increasing medication before the start of the hay fever season, avoiding non-steroidal anti-inflammatory drugs or by the early use of oral corticosteroids with viral- or allergic-induced exacerbations.
- The use of patient-held ‘rescue’ medications including oral corticosteroid and self-administered adrenaline (in people prone to anaphylaxis), as part of a written self-management plan, should be considered for all patients who have had a life-threatening asthma attack or a near fatal episode.
In the year preceding death, inhaler technique had been checked in 49 per cent of people in primary care and 17 per cent in secondary care. Nonadherence to prescribed medication was a potentially avoidable major factor in 15 per cent of deaths in which the person did not take prescribed medication in the previous month and 13 per cent in the previous year. Failure to take appropriate medication was a factor in 72 per cent of deaths in 10–19 year-olds and 40 per cent of children under 10 years old.

**Other recommendations**

The report includes advice prepared by Asthma UK for patients and carers about the care they should expect to receive and the avoidable factors they can identify and act on. It also includes 13 recommendations for GPs prepared by Primary Respiratory Society UK, covering good practice in prescribing and management, and ensuring good processes of care.

**Conclusion**

The National Review of Asthma Deaths identifies many examples of substandard care that underlie potentially avoidable factors contributing to deaths from asthma. These arise at least partly from failure to implement long-established guidance on asthma management. The report’s recommendations provide a clear pathway for restoring asthma care to an acceptable standard for everyone with asthma. They include several simple but valuable changes to prescribing practice as well as the introduction of electronic surveillance of prescribing in primary care.

**Reference**


**Declaration of interests**

None to declare.

*Steve Chaplin is a pharmacist who specialises in writing on therapeutics.*