The Royal College of Pathologists
Pathology: the science behind the cure

Guidelines on autopsy practice

Autopsy for suspected acute anaphylaxis (including anaphylactic shock and anaphylactic asthma)

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Comments	This document will replace the 1st edition of the *Guidelines on autopsy practice: Autopsy for suspected acute anaphylaxis (includes anaphylactic shock and anaphylactic asthma)*, published in 2018. In accordance with the College's pre-publications policy, this document was on the Royal College of Pathologists' website for consultation from 4 August to 1 September 2025. **Dr Brian Rous and Sarah Davies** **Clinical Leads for Guideline Review**

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Contents

Foreword

The autopsy guidelines published by the Royal College of Pathologists (RCPath) are guidelines that enable pathologists to deal with non-forensic consent and coroner's/procurator fiscal post-mortem examinations in a consistent manner and to a high standard. The guidelines are systematically developed statements to assist the decisions of practitioners and are based on the best available evidence at the time the document was prepared. Given that much autopsy work is single observer and 1-time only in reality, it has to be recognised that there is no reviewable standard that is mandated beyond that of the FRCPath Part 2 exam or the Certificate of Higher Autopsy Training (CHAT). Nevertheless, much of this can be reviewed against ante-mortem imaging and other data. This guideline has been developed to cover most common circumstances. However, we recognise that guidelines cannot anticipate every pathological case type and clinical scenario. Occasional variation from the practice recommended in this guideline may therefore be required to report an autopsy in a way that that maximises benefit to the pathologist, coroner/procurator fiscal and the deceased's family.

There is a general requirement from the General Medical Council (GMC) to have continuing professional development (CPD) in all practice areas, which will naturally encompass autopsy practice. Those wishing to develop expertise/specialise in pathology are encouraged to seek appropriate educational opportunities and participate in the relevant external quality assurance (EQA) scheme.

The guidelines themselves constitute the tools for implementation and dissemination of good practice.

The following stakeholders were consulted for this document:

- United Kingdom Fatal Anaphylaxis Register (UKFAR)
- British Society for Immunology Clinical Immunology Professional Network (BSI-CIPN)
- British Society for Allergy and Clinical Immunology (BSACI)
- Coroners Society of England and Wales
- Crown Office and Procurator Fiscal Service
- Coroners Service of Northern Ireland
- Human Tissue Authority.

The information used to develop this document was derived from current medical literature and a previous version of this guideline. Much of the content of the document represents custom and practice and is based on the substantial clinical experience of the authors. All evidence included in this guideline has been graded using modified SIGN guidance (see Appendix A). The sections of this autopsy guideline that indicate compliance with each of the AGREE II standards are indicated in Appendix B.

No major organisational changes or cost implications have been identified that would hinder the implementation of the guidelines.

A formal revision cycle for all guidelines takes place on a 5-yearly cycle and the full revised version (incorporating the changes) will replace the existing version on the College website.

The guideline has been reviewed by the Professional Guidelines team, Death Investigation Committee, Forensic Pathology Specialty Advisory Committee and Lay Advisory Group. It was placed on the College website for consultation with the membership from 4 August to 1 September 2025. All comments received from the membership were addressed by the author to the satisfaction of the Clinical Lead for Guideline Review.

This guideline was developed without external funding to the writing group. The College requires the authors of guidelines to provide a list of potential conflicts of interest; these are monitored by the Professional Guidelines team and are available on request. The authors have declared no conflicts of interest.

1 Introduction

The incidence of allergy worldwide is on the rise, with a 108% increase in UK accident and emergency attendance in the past 20 years (2002–2022).[1,2] The UK Fatal Anaphylaxis Register (UKFAR) estimates 20–50 deaths occur annually related to anaphylaxis based on Office of National Statistics data. This is likely to be an underestimate based on the numbers of hospital admissions described above.[3] Those cases that are identified as anaphylaxis-related and reported to UKFAR can contribute to shared learning and improved awareness, as described in the Prevention of Future Deaths notifications issued in the past 10 years.[4–6] UKFAR is also able to support pathologists with these cases. Findings from UKFAR have been incorporated into this guideline to ensure consistency of investigation.[7]

Anaphylaxis kills by either shock or asphyxia. These may occur with no other signs of an allergic reaction. Consequently, anaphylactic shock may be misdiagnosed as myocardial infarction. Anaphylactic shock occurring in hospital is often related to intravenous (IV) medication use and is rapid in onset (median: 5 minutes). Arrhythmia and pre-existing cardiac disease predispose to more severe reactions. Outside the hospital, anaphylaxis usually presents with a slower onset as the route of exposure is often oral (median: 15 minutes), apart from anaphylaxis to insect sting, which progresses to shock rapidly (similar to IV medications). Myocardial ischaemia is very probable (almost inevitable) in shock deaths, which may therefore be mistaken for primary myocardial infarction.[8]

Food and aspirin anaphylaxis may be misdiagnosed as fatal asthma.[9–11] Asphyxia may be due to asthma, as seen in those with food allergies or non-steroidal anti-inflammatory drug (NSAID)/aspirin sensitivity. In some cases, with underlying asthma, a severe exacerbation of asthma may reveal an acute on chronic fatal asthma exacerbation on post-mortem examination. Food particles may be seen embedded in the mucus in those where aspiration of vomitus occurs pre-death. Death may be delayed for up to 3 hours, for example after ingestion of NSAIDs.[12–14] Following resuscitation and return of spontaneous circulation, patients may receive supportive care in an intensive care unit for days before withdrawal of care. Post-mortem findings in such cases may evidence failing organs. Serial mast cell tryptase (MCT) results, or suitable samples for analysis, may be available in these cases.

Takotsubo cardiomyopathy and Kounis syndrome are described to occur with anaphylaxis. These too may be misinterpreted to be primary cardiac causes of death instead of being caused by preceding anaphylaxis.[15,16]

1.1 Target users and health benefits of this guideline

The target primary users of these guidelines are consultant pathologists performing coronial and procurator fiscal post-mortem examinations. The recommendations will also be of value to trainee pathologists, especially those considering the Certificate of Higher Autopsy Training (CHAT).

2 The role of the autopsy

To determine whether, on the balance of probability, there is:

- morbid anatomical evidence to support the suspected anaphylaxis and its timing
- evidence of other pathological conditions that could account for death or contributed to death
- biochemical evidence suggestive of anaphylaxis
- serological evidence of the agent (i.e. any medication or food taken immediately and up to 1 hour prior to collapse, or any sites of stinging or biting invertebrates [e.g. wasp or bees stings]) responsible for initiating anaphylaxis, if possible
- evidence to suggest any alternative causes and contributing factors, given that there are often very few signs of anaphylaxis at autopsy.

[Level of evidence – GPP.]

3 Pathology of anaphylaxis encountered at autopsy

Often, there is little or nothing specific to see, grossly or histopathologically.[8] When pathology of anaphylaxis is encountered at autopsy, the following pathological findings may be seen, listed below in order of relevant importance.

- Laryngeal (or pharyngeal, or other upper airway) oedema; however, intubation during resuscitation can also cause localised oedema, therefore care should be taken when assessing this sign.[10]

- Pulmonary oedema, which, if present, may indicate adrenaline (epinephrine) overdose.
- Aspiration is encountered in cases where vomit occurs with increased work of breathing and laryngeal oedema or exacerbation of asthma. Food particles may be visible in such cases within mucus in the medium and small airways.
- Cerebral oedema can be present in some cases. This has been noted not only in those who have return of circulation following resuscitation and receive supportive care in the intensive care unit but also in those with a very short period between exposure to allergen and death (lasting less than 2 hours). This raises suspicion of coning as a significant contributory cause of collapse.[8]
- Intestinal haemorrhagic areas visible macroscopically with sloughing from variable lengths of intestine has been noted in some cases.
- Mucus plugging and hyper-expansion of the lungs may indicate an asthmatic crisis or anaphylactic fatal asthma.[13,14]
- Nasal polyposis can be seen in anaphylaxis cases related to NSAID hypersensitivity (NSAID-exacerbated respiratory disease).[14]
- In cases suspected to have Takotsubo cardiomyopathy as a consequence of anaphylaxis, contraction band necrosis is seen. This is myocyte injury characterised by hypercontracted sarcomeres, dense eosinophilic transverse bands and an interstitial mononuclear inflammatory response that is distinct from polymorphonuclear inflammation seen in the usual myocardial infarct.[15] In life, electrocardiogram (ECG) changes such as ST segment elevation and arrythmia may be observed.[16]
- Additional pathology may be present if the patient was resuscitated and survived but then died in intensive care, which can be at times difficult to separate from the index event.

[Level of evidence D – The evidence has been taken from reviews of various texts/case reports and other presented cases in medical and legal settings.]

4 Clinical information relevant to the autopsy

Prior to conducting an autopsy of a suspected anaphylaxis related death, pathologists are advised to obtain clinical information relevant to the examination as well as communicate

to the relevant stakeholders about the case. Careful consideration should be given to the following prior to autopsy examination.

4.1 Communication and documentation

- UKFAR should be contacted for advice and guidance on all suspected anaphylactic deaths. It is recommended to inform UKFAR prior to examination for support regarding samples required, accurate recording and shared learning (contact via email at mft.fatal.anaphylaxis@nhs.net or online at www.bsaci.org).[7]
- Prompt communication to the area senior coroner or procurator fiscal for suspected anaphylaxis cases is recommended to enable prioritisation of the autopsy and blood samples to be taken as soon as possible after death under the appropriate authority.[6]
- The complete medical notes, with statements from witnesses as to the final events at collapse, if witnessed.

4.2 Relevant clinical information prior to episode preceding death

- Evidence to suggest poorly controlled asthma, e.g. due to under-treatment or recent exacerbation.
- Previous history of food, drug or insect sting allergy or asthma aggravated by NSAIDs (these patients usually have nasal polyps).
- Any medication or food taken immediately prior to collapse, or any wasp or bee sting.
- The complete drug history, with times, doses and routes of administration.
- Any recent procedures that required new medication administration prior to collapse.
- Whether the patient had cardiopulmonary resuscitation/cardiac defibrillation or details of resuscitation, if relevant.
- If blood samples have been taken at the time of hospital admission, it is recommended that these samples should be retained in cases of suspected anaphylaxis for subsequent testing.[6]

4.3 Relevant information related to environment and estimated interval between episode and death

- Circumstances of body and surroundings if death not witnessed.
- Time of death with respect to any suspected reaction.

[Level of evidence – GPP.]

5 The autopsy procedure

5.1 Before examination starts – prioritisation and sample taking before autopsy

- Suspected anaphylaxis cases should be prioritised.
- Early blood samples should be taken as soon as possible after death under the appropriate authority.[6,11]
- Route and brand of adrenaline (epinephrine) administration device should be identified, if possible, as well as the dose administered and the expiry date of the device.[17]

5.2 External examination – specific points to note in suspected anaphylaxis cases

- Carefully search for sites of allergic reaction, scratch marks, rash, swelling, and stinging or biting invertebrates (e.g. wasp or bee stings) if there is reason for suspicion.
- Examine the site of emergency adrenaline (epinephrine) injection, if known, and determine the depth of the injection tract and the skin-to-muscle depth at the site of injection. These injection sites are frequently in the lateral mid-thigh area with the appearance of a puncture or bruise.[17]

5.3 Internal examination with relevant samples in suspected anaphylaxis cases

- Complete autopsy examination with toxicological samples (blood, vitreous and urine collection).
- Blood sample collection for MCT and specific immunoglobulin E (IgE) response to suspected allergens.
- Stomach contents examination for visible evidence of foods, particularly if anaphylaxis related to food is suspected. Freeze stomach contents for further examination if required in the future to confirm the presence of a suspected or relevant allergen.

[Level of evidence – GPP, UKFAR guidance.]

6 Specific organ systems to be considered

- Lung, larynx and airways examination for significant oedema (often difficult to identify after death, even if recognised during attempted resuscitation).
- Lung for evidence of acute asthma (airway plugging and eosinophilia) and/or chronic asthma (airway remodelling, basement membrane thickening, mucinous metaplasia, bronchial wall inflammatory cell infiltrate).[13,14]
- Lung for evidence of aspiration (food particles may be noted in mucus). Nasal sinuses for evidence of extensive nasal polyps, which would support a likely diagnosis of NSAID-intolerant asthma in the presence of a suitable history (aspirin/NSAID-exacerbated respiratory disease, also known as Samter's triad).[18]
- Coronary arteries and heart for contributory ischaemic heart disease (myocardial ischaemia is an inevitable consequence of anaphylactic shock, even with normal coronary arteries). Contraction band necrosis in Takotsubo cardiomyopathy.[16]
- During coronary artery stenting, some patients may suffer an allergic reaction to anti-clotting drugs or materials incorporated into the stent; this may also lead to local thrombosis from hypotension. Kounis syndrome has been noted in drug anaphylaxis and may present as a non-ST elevation myocardial infarction in life.[19]

[Level of evidence D – The evidence has been taken from reviews of various texts/case reports and other presented cases in medical and legal settings.]

7 Histological examination

The histological sampling of the relevant organs in anaphylaxis-related deaths should include:

- heart – note contraction band necrosis that may reflect inotropic resuscitation measures or Takotsubo cardiomyopathy. Stains such as trichrome and phosphotungstic acid haematoxylin can be used to assess fibrosis and ischaemic damage.[16]
- coronary artery (decalcified sections ideally) – mast cells can be present and thrombus formation. There may not be specific features seen as the usual mechanism is vasoconstriction or vasospasm, which may not be evident histologically.[8]

- lung with airways – increased eosinophil deposition within airway mucosa as well as pulmonary and tracheal oedema can be seen.[8]
- vocal cord mucosa (longitudinal sections through the larynx) – oedema and increased eosinophil deposition can be seen.[8]

[Level of evidence D – The evidence has been taken from reviews of various texts/case reports and other presented cases in medical and legal settings.]

8 Toxicology

- Blood, preserved and unpreserved.
- Urine, preserved and unpreserved.
- Vitreous humour.
- Gastric contents.

Serum drug levels should be reported, e.g. for aspirin, opiates, paracetamol, alcohol.

9 Other relevant samples

Note that extreme caution is required in interpreting post-mortem tryptase levels. The advice of an experienced immunologist/allergist is required to avoid false-positive or false-negative interpretations.[20–23] Anaphylaxis can occur without elevated tryptase in blood.

9.1 Preferred samples to be taken/retained for suspected anaphylaxis cases

- Ante-mortem serum and/or plasma blood specimens (in pathology laboratories) before they are discarded – these should be urgently requested as soon as the case is instructed for autopsy. Serum tryptase is stable in blood so, in a deceased patient from whom further sample collection is impossible, serum, heparinised or ethylenediaminetetraacetic-acid-treated plasma may be analysed. Serum is the preferred sample type for tryptase analysis.
- Cadaveric blood, preferably taken from a clamped femoral vein, should be centrifuged and the serum should be frozen (less than –20 °C) and sent for MCT measurement. As much blood as possible should be sent for analysis, ideally 10 ml of blood centrifuged and stored as serum (using a serum separating blood tube).

- Blood taken post mortem may be useful for the measurement of specific IgE antibodies to the allergen(s) implicated in the suspected reaction. Serum should be centrifuged and frozen (–20 °C). The allergens may include some drugs (e.g. penicillin), foods (e.g. peanut, fish) or venoms (e.g. bee or wasp venom). The allergens must be carefully selected according to the pre-test probability, led by the history and with expert consultation before testing from an immunologist/allergist with relevant experience. It is inappropriate to request a wide selection of random specific IgEs in the hope of identifying the causative allergen. The results of any specific IgE testing must be interpreted with caution; specific IgE even to the causative allergen may be low or undetectable after a severe reaction and positive results do not prove causation. However, results can add to the 'balance of probability' if interpreted in the context of the clinical history.
- Analysis of gastric contents may allow identification of drugs and foods recently ingested when food- or oral-drug-related allergy are suspected. Immediate visual inspection is essential. Gastric contents should be frozen for analysis and confirmation of presence of the allergen in the stomach.
- Analysis of previously sent nasogastric aspirates along with any remaining food on the presumed plate of the deceased as the most recently ingested food prior to death are also helpful. Any food evidence should be collected by the police from the vendor if applicable. These specimens should be frozen for later analysis.
- Material suitable for DNA preparation (e.g. spleen, psoas muscle – frozen or appropriate fixative to enable stable DNA extraction) should also be retained in case of the need for genetic assessment. This information can provide important information on risk factors for severe anaphylaxis or mastocytosis.
- Bone marrow or bone trephine biopsy should be retained for genetic analysis and, if required, for histopathology examination to assess for mastocytosis.

9.2 Considerations regarding specimen integrity and storage

- Tryptase is a stable analyte. Samples should always be taken, even if the autopsy is done days, or even weeks, post mortem; however, it is recommended to take blood samples as soon as possible after a case has been identified as suspected anaphylaxis under the appropriate authority.
- Tryptase concentrations can be increased by cell autolysis or liquefaction, thus careful interpretation of the results is essential. Owing to the requirement to centrifuge and

freeze the serum sample, it is advisable to contact an appropriate laboratory service that can assist prior to examination.[7]

- Your local immunology department should be able to advise you on sample collection, suitability and result interpretation. Many immunology departments provide tryptase and specific IgE measurements. Specialist advice on samples and interpretation is available from UKFAR; UKFAR should be contacted early and ideally prior to post-mortem examination for advice and guidance on any suspected cases. Pathologists are strongly encouraged to report cases to UKFAR, where appropriate (contact via email at mft.fatal.anaphylaxis@nhs.net or visit www.bsaci.org).[7]

9.3 Appropriate sample sites for tryptase measurement

The site of sampling for tryptase measurements post mortem is important because there can be significant variation in tryptase results between samples taken from the aorta, subclavian artery and femoral vessels. It is preferable, therefore, that post-mortem samples for tryptase are taken from femoral blood vessels; in any case, the site of sampling should be specified on the request form.

9.4 Interpretation of tryptase results

Tryptase is not always raised in anaphylaxis and may be moderately raised for other reasons, such as major trauma or following prolonged cardiopulmonary resuscitation. Serum tryptase concentration can also be raised in hereditary alpha-tryptasaemia (which has been reported to occur in 5% of the population), systemic mastocytosis, some myelodysplastic syndromes, mast cell leukaemia and renal failure.

Low, normal or raised serum tryptase can be seen in anaphylaxis cases (there is no currently validated reference range at post mortem to confirm anaphylaxis).[23] Diagnosis should be on the basis of clinical history, autopsy findings and histology. Even with raised levels advice should be sought from an experienced immunologist/allergist.

[Level of evidence D – The evidence has been taken from reviews of various texts/case reports and other presented cases in medical and legal settings, including UKFAR guidance.]

10 Imaging

Imaging-based autopsy examination should never be undertaken without an expert external examination of the body having first been performed by an appropriately trained and experienced individual.

The utility of post-mortem computed tomography (PMCT) is expanding as experience and expertise in this field develops. There is some published evidence to support the use of PMCT as an adjunctive modality in suspected cases of anaphylaxis (e.g. to identify acute airway oedema prior to evisceration)[11] and in the investigation of known or suspected specific pathology (e.g. sudden cardiac death).[12]

Access to appropriate imaging facilities and expertise varies around the country; where they are available, the use of PMCT as an adjunct to standard autopsy should be supported.

While there are benefits to using PMCT as an adjunct to identify cases of possible anaphylaxis, there are certain samples that would be best obtained via an invasive examination (e.g. gastric contents, histology and DNA samples). Adrenaline injector use can appear as a streak on PMCT; however, there is currently no robust evidence to reliably measure needle depth. The recommended best practice is to carry out an invasive examination in cases of suspected anaphylaxis and utilise PMCT as an adjunct, rather than replacement, of invasive examination prior to issuing a cause of death related to anaphylaxis.[24,25]

11 Modes of death in anaphylaxis

- Cardiac arrest secondary to peripheral vasodilation and myocardial ischaemia.
- Asphyxia and respiratory arrest due to upper airway oedema, lower airway mucus plugging or aspiration of vomit.[10]
- Delayed deaths: coma due to hypoxic encephalopathy, respiratory failure due to pneumonia.
- Subsequent cardiac pathology as a consequence of the anaphylaxis.[25,26]
- Acute asthma can be related to anaphylaxis; it is important to consider the possibility of allergen ingestion or contact and the circumstances of death in asthma-related cases to ensure the possibility of anaphylaxis has been considered.

[Level of evidence D – The evidence has been taken from reviews of various texts/case reports and other presented cases in medical and legal settings.]

12 Clinicopathological summary

The following should be documented:

- the gross and histological findings
- blood MCT
- other serological investigations, if carried out (e.g. specific IgE)
- the clinical sequence of events, to identify any possible allergens.

On the balance of probabilities (civil standard) it should be decided whether:

- the death was reasonably attributable to anaphylaxis and, if possible, which agent or drug was responsible
- raised blood MCT may suggest anaphylaxis (especially if there is a dynamic increase from a baseline sample), in which case discuss with UKFAR or an immunologist/allergist to determine the relevance of the result
- normal blood MCT does not exclude fatal anaphylaxis, in which case discuss with UKFAR or an immunologist/allergist where the history is suspicious for anaphylaxis
- the cause of death cannot be ascertained.

13 Examples of cause of death opinions/statements

1a Anaphylactic shock.

1b Allergy to penicillin.

1a Fatal asthma caused by anaphylaxis.

1b Allergen.

14 Criteria for audit

The following standards are suggested criteria to be used in periodic reviews to ensure a post-mortem report for coronial autopsies conducted at an institution comply with the

national recommendations provided by the 2006 National Confidential Enquiry into Patient Outcome and Death (NCEPOD) study.[27]

Information that should be available for suspected anaphylaxis-related deaths include clinical history, chronology with information on allergens and asthma, adrenaline (epinephrine) injector use and type.

Supporting documentations:

- standard: 100% of supporting documentation are available at the time of the autopsy.
- standard: 95% of autopsy reports are satisfactory, good or excellent.
- standard: 95% of autopsy reports document discussion with UKFAR/specialist immunology for cases of suspected anaphylaxis.

Reporting internal examination:

- standard: 100% of the autopsy report must explain the description of internal appearance.
- standard: 100% of autopsy reports are satisfactory, good or excellent.

Reporting external examination:

- standard: 100% of the autopsy report must explain the description of external appearance.
- standard: 100% of autopsy reports are satisfactory, good or excellent.

A template for coronial autopsy audit can be found on The Royal College of Pathologists' website: www.rcpath.org/profession/quality-improvement/conducting-a-clinical-audit/clinical-audit-templates.html.

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Appendix A Summary table – Explanation of grades of evidence

(modified from Palmer K *et al. BMJ* 2008;337:1832)

Grade (level) of evidence	Nature of evidence
Grade A	At least 1 high-quality meta-analysis, systematic review of randomised controlled trials or a randomised controlled trial with a very low risk of bias and directly attributable to the target population or A body of evidence demonstrating consistency of results and comprising mainly well-conducted meta-analyses, systematic reviews of randomised controlled trials or randomised controlled trials with a low risk of bias, directly applicable to the target cancer type.
Grade B	A body of evidence demonstrating consistency of results and comprising mainly high-quality systematic reviews of case-control or cohort studies and high-quality case-control or cohort studies with a very low risk of confounding or bias and a high probability that the relation is causal and which are directly applicable to the target population or Extrapolation evidence from studies described in A.
Grade C	A body of evidence demonstrating consistency of results and including well-conducted case-control or cohort studies and high-quality case-control or cohort studies with a low risk of confounding or bias and a moderate probability that the relation is causal and which are directly applicable to the target population or Extrapolation evidence from studies described in B.
Grade D	Non-analytic studies such as case reports, case series or expert opinion or Extrapolation evidence from studies described in C.
Good practice point (GPP)	Recommended best practice based on the clinical experience of the authors of the writing group.

Appendix B AGREE II guideline monitoring sheet

The autopsy guidelines of The Royal College of Pathologists comply with the AGREE II standards for good quality clinical guidelines. The sections of this autopsy guideline that indicate compliance with each of the AGREE II standards are indicated in the table.

AGREE standard		Section of guideline
Scope and purpose		
1	The overall objective(s) of the guideline is (are) specifically described	Introduction
2	The health question(s) covered by the guideline is (are) specifically described	Introduction
3	The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described	Foreword
Stakeholder involvement		
4	The guideline development group includes individuals from all the relevant professional groups	Foreword
5	The views and preferences of the target population (patients, public, etc.) have been sought	Foreword
6	The target users of the guideline are clearly defined	Introduction
Rigour of development		
7	Systematic methods were used to search for evidence	Foreword
8	The criteria for selecting the evidence are clearly described	Foreword
9	The strengths and limitations of the body of evidence are clearly described	Foreword
10	The methods for formulating the recommendations are clearly described	Foreword
11	The health benefits, side effects and risks have been considered in formulating the recommendations	Foreword and Introduction
12	There is an explicit link between the recommendations and the supporting evidence	2–15
13	The guideline has been externally reviewed by experts prior to its publication	Foreword
14	A procedure for updating the guideline is provided	Foreword
Clarity of presentation		
15	The recommendations are specific and unambiguous	2–15
16	The different options for management of the condition or health issue are clearly presented	2–15
17	Key recommendations are easily identifiable	2–15

Applicability		
18	The guideline describes facilitators and barriers to its application	Foreword
19	The guideline provides advice and/or tools on how the recommendations can be put into practice	Foreword
20	The potential resource implications of applying the recommendations have been considered	Foreword
21	The guideline presents monitoring and/or auditing criteria	16
Editorial independence		
22	The views of the funding body have not influenced the content of the guideline	Foreword
23	Competing interests of guideline development group members have been recorded and addressed	Foreword