Literature review of key findings in asthma death confidential enquiries and studies

1st author; location; years when asthma deaths were studied	Type of study; number of asthma deaths confirmed on review/number of deaths certified on MCCD (% correct)	Ages (years)	Conclusions/avoidable factors	Comments
MacDonald; Cardiff, UK; 1963–1974 (1)	Record review; 50 deaths in hospital	10–82	• Patient and doctor underestimated severity of attack • Inadequate past assessment of asthma • Physiological measurements rarely made • Unidentified risk status • Underuse of steroids	• On admission most patients were severely ill • One-third died within 24 hours
MacDonald; Cardiff, UK; 1963–1974 (2)	Record review; 90 deaths in community	9–76	• Patient and doctor underestimated severity of attack • Inadequate past assessment of asthma • Unidentified risk status • Underuse of steroids • Those especially at risk if recently discharged after an attack	• The fatal attack was typically short and most likely to occur in patients with a long history of asthma • Deaths often before effective medical help
Cochrane; London, UK; 1971 (3)	Record review; 19 of 39 asthma deaths investigated	35–64	• Insufficient treatment • No physiological assessment of airflow obstruction was made in over half of the patients	
Foucard; Sweden; 1952–1972 compared with 1973–88 (4)	Hospital record review	1–24	• Increasing mortality from less severe asthma not treated with anti-inflammatory drugs	• In younger children, asthma was more severe, and no difference was found between the two periods of the study

BTA; West Midlands & Mersey, UK; 1979 (5)	Confidential enquiry, record review and questionnaire interview with the GP and a relative; 90/147 (61%) asthma deaths confirmed	15–64	• Most had suffered severe attacks previously • Avoidable factors in 77% • Failure to recognise severity by patients, relatives and doctor • Adherence satisfactory in only 42/90 • Final attack delays • Inadequate past therapy • Inadequate past assessment of asthma • Unidentified risk status • Underuse of steroids	• 77 community and 23 hospital deaths
Campbell; South Australia; 1979–1988 (6)	Case–control; NFA 154, fatal 80; record review, interviews with GP and families	Mean: NFA 52; fatal 36	• Near-fatal asthma (NFA) more likely in younger males without comorbidities - where fatal attacks were deemed preventable. • NFA less likely to have delays in receiving treatment and had better access to care	
Sears; New Zealand; 1981–83 (7)	National record review of all deaths; <70s: interviews of family, friends, and GP; 493 cases notified (in 2 years); 58/150 (39%) >70s and 271/342 (79%) <70s confirmed asthma deaths	All	• Failure to recognise severity by patients, relatives and doctor • Inadequate past therapy • Inadequate past assessment of asthma • Failure of the family to call for help when required • Delays and inadequate responses of medical services • Most childhood deaths from asthma should be prevented by increased family awareness, better assessment of severity, improved long-term treatment, and rapid access to emergency medical care	• Accuracy of certification: 100% in those <35 years; accuracy across all age groups =74.6% • Only 6% had not required emergency treatment in the year before death

Fletcher; north England, UK; 1970–1985 (8)	Confidential Enquiry; 44 deaths notified; 35 cases investigated in detail	0–16	• 80% were preventable • Inadequate past assessment • Unidentified risk status in 50% • Inadequate past therapy • Delays in seeking help in final attack • Inappropriate response by clinician • Poor treatment in final attack	• 28/44 (64%) died at weekend
Robertson; Melbourne, Australia; 1986–1989 (9)	Interviewer-administered questionnaire; 51 deaths	<21	• Majority not classifiable as high risk (33% mild, 32% no previous admissions) • Inadequate past assessment and therapy • Poor adherence to advice (patients) • Delays in seeking help	
Mohan; east of England, UK; 1992–1994 (10)	Confidential Enquiry, record review, GP and patient interviews; 36/50 (72 %) confirmed asthma deaths	<65 (2 children <20)	• Avoidable factors in 80% • 59% of fatal attacks occurred in people with poorly controlled asthma • Inadequate past routine management, assessment and therapy • Inadequate objective monitoring • Underuse of steroids • No patient education in 30% • No follow-up of non-attenders 20% • Relatives failed to respond appropriately 20%	

Bucknall; Scotland, UK; 1994–1996 (11)	Confidential review of records and interviews; 95/235 (40%) confirmed asthma deaths	All ages (65 aged 15–64)	• Some improvements compared with BTA study (5) • Inappropriate/inadequate past management • Lack of objective measurement of respiratory function • No follow-up after hospital discharge • Unsatisfactory management of the final attack • Failure to recognise risk status • Poor asthma control (53%) • Too much left to the patient's own discretion • Failure to recognise poor adherence (not picking up prescriptions; excessive bronchodilators) • Inadequate inhaled steroids • Frequent oral steroids despite inadequate inhaled steroids • Failure to continue oral steroids after hospital discharge in one case previously on long-term steroids • Delay obtaining help	
Bergström, Sweden, 1994–2003 (12)	Medical records and autopsy reports were assessed and telephone interviews with next-of-kin performed: 37/75 (49%) confirmed asthma deaths	1–34; (12 children <19)	• 27% of deaths in people with mild asthma • Inadequate past therapy • Unidentified risk status (food allergy in 30%) • Patients delayed seeking help • 11% occurred following hospital discharge (two cases discharged on inadequate treatment) • Patient factors in 62%: non-compliance, psychosocial factors including alcohol and drug misuse)	• One patient told to discontinue treatment as she was pregnant • Two people were discharged home from hospital without adequate treatment

Jaludin; New Zealand; 1993–1995 (13)	Case–control study; structured telephone survey: 67/157 (43%) confirmed asthma deaths. 42 investigated compared with 132 random asthma sample in community and 89 hospital controls – post-admission for asthma	10–59	Risk factors – increased risk of asthma death due to: • Severity of asthma • Increased health service utilisation • Suboptimal asthma self-management
Burr; Wales, UK; 1994–1996 (14)	Confidential Enquiry; record review and family interviews; 52/80 (65%) asthma deaths confirmed	<65 (2 children <15)	• Patient factors in (60%) • Severity was a major factor • Inadequate past therapy in 29% of cases
Sturdy; England, Scotland, Wales, UK; 1994–1998 (15)	Case–control study: 681 subjects with asthma in Part I on the death certificates. 532 hospital controls from primary care records	<65	Risk factors for asthma death: • Fewer general practice contacts in the previous year • More home visits in the previous year • Fewer peak expiratory flow recordings in the previous 3 months

Harrison, England, 2001–2003 (16)	Confidential review of case notes; 95 certified cases reviewed, 57 confirmed asthma deaths	<65	• 80% not sudden – may have been prevented • Monthly deaths peaked in August • Poor adherence • Poor diagnosis • Inadequate routine management • Inadequate past assessment • Failure to recognise risk status • Underuse of steroids • Underestimated severity of attack	• 53% severe asthma, 21% moderate
Anagnostou, UK Eastern Region, 2001–2003 (17)	Observational case–record analysis: 20 deaths	8–17	• 45% had mild to moderate asthma • Poor patient adherence to advice • Unidentified risk status • Inadequate past assessment and therapy • Poorly controlled • Half of the severe cases managed in primary care alone • Many referrals delayed / not considered • One child with severe asthma was referred and not seen by specialist • Underestimated severity of attack	

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