

Reporting occupational illness

A practical, cause-based reporting scheme

Occupational physician Anthony Bell gives a personal account of instituting an occupational illness-reporting scheme within a large mining corporation in South Africa. He draws parallels with the current situation in the UK and suggests how a practical and cause-based approach could be used to improve disease reporting and promote employer responsibility.

I was working as part of a small team responsible for occupational health provision for Ingwe Coal Corporation, a group of coalmines based in South Africa. Largely in response to legislative changes, the medical service had been refocused away from the prevailing model of providing clinical medical services to employees, towards a dedicated OH service. Curative services were funded by medical insurance schemes made available to all employees. The medical service had been restructured and the group retained two full-time physicians as well as part-time OH physicians, serving several disparate sites.

Around 12,000 full-time employees were under our care, as well as a similar number of contractor employees. Emphasis was placed on appropriate screening and surveillance, and OH assumed a new prominence in the company. There was a drive to put OH issues 'on the map' and occupational illness incidence became a key performance indicator for management. It became apparent, however, that once processes had been standardised among the OH practitioners, there was considerable variability in diagnosis of occupational conditions. Management did not feel confident to act on the information physicians were giving them and were unable to benchmark performance between different sites. At corporate level, the utility of OH indicators for management performance measurement was undermined. Our inability to provide reliable data was allowing managers to avoid their responsibility in managing health in the workplace. We had long been clamouring to have our voices heard, and now that senior management were listening we were losing credibility because of differences of opinion and practice between us.

Much of the variability in occupational illness reporting was a consequence of the gap between the level of severity that many conditions were required to reach for compensation purposes and the early detection possible with sensitive screening tools. This was particularly the case for noise-induced hearing loss, where the threshold for compensation at the time was an average pure tone hearing loss of 25dB in both ears at the frequencies 0.5kHz, 1kHz, 2kHz, and 3kHz. Some physicians were reporting only at levels where referral to the state compensation system was appropriate, while others were

reporting to management those cases where disease or dysfunction was evident but not at a compensatable level of severity. Physicians in the latter category argued that the purpose of a screening system is prevention, and that a system tuned to finding only late stages of disease is unethical in an environment where the resource is available for preventive action: a point that we all found persuasive. Occupational health was coming of age, but we found ourselves unable to speak in the consistent terms that the organisation would understand and be able to respond to. We needed a scheme that would:

- provide reliable data for performance reporting
- facilitate a graded hierarchy of response from the organisation
- be simple enough to be implemented and used by part-time physicians without specific specialist knowledge
- be practicable in a screening environment where a physician would review and decide on upwards of 50 screening examinations a day
- be flexible enough to accommodate occupational illnesses from a variety of different operations.

Some edited extracts of one of the original documents are given in box 1.

OUTCOME

We developed criteria for noise induced hearing loss, the pneumoconioses, asthma, chronic obstructive pulmonary disease (COPD) and dermatitis, which we used for two years before I left. The criteria were essentially arbitrary, but aimed to categorise conditions as 'early' where abnormality was evident beyond reasonable doubt, and 'advanced' where there was significant functional impairment likely to cause disability. The criteria were based largely on medical guidelines and opinion available at the time, although some related to compensation thresholds in prevailing legislation where these were clear and appropriate to use.

The criteria did not require modification during a two-year period. We were able to defend our figures through audits and, because of the robust data, the company felt confident in committing resources to tackle the identified

Box 1: Occupational disease classification scheme

The classification system for occupational diseases for reporting purposes attempts to provide an objective set of generic criteria, which can be applied in classifying any occupational disease. It is designed to be independent of legislative constraints (which may change from time to time, or from country to country) and internally consistent, based on medical or clinical information. It lends itself to application in multi-level organisations, and aims to provide information that can be used as the basis for a management information system. Simplicity and ease of use are also considered important. The principles are simple:

Disease severity

Three classes of severity are recognised, corresponding to incrementing impairment and disablement.

- *Possible disease*: No objective evidence of functional impairment demonstrable, or where the occupational nature of the disease is in question, or where the diagnosis is uncertain
- *Early disease*: Objective evidence of functional impairment is present, ie a test result falls outside the normal range.
- *Advanced disease*: Functional impairment is severe or disabling (interferes with social/employment activity)

Occupational exposure requirement

The practitioner reporting the case must be reasonably satisfied that relevant exposure has been incurred in the course of work, even if it predates employment with the company. If no objective measurements are available, then professional judgement should be used, erring on the side of the employee. If significant doubt exists regarding occupational exposure, the corresponding disease should be classified in the ‘possible’ category.

Diagnostic certainty

Increasing levels of disease severity require correspondingly more rigorous verification.

- *Advanced disease* should be externally verified, preferably by relevant specialist or equivalent.
- *Early disease* requires some objective evidence – x-rays, lung function tests, skin patch testing, laboratory confirmed Hepatitis etc. This diagnosis may be made by the plant medical practitioner
- *Possible disease* may be diagnosed without objective evidence or external verification.

The table summarises the principles of the scheme:

Severity	Occupational exposure	Objective impairment	Verification
Possible	Unsure	Any degree	None
Possible	Yes	None	None
Early	Yes	Yes – mild	Internal
Advanced	Yes	Severe or disabling	External

Note: It must be stressed that only cases that are occupational in nature, in other words caused, or significantly aggravated, by occupation, are to be reported in the early or advanced disease categories.

occupational illnesses. After an initial phase of uptake and classification of prevailing cases, we were able to provide data on incident cases to management. This facilitated the development of root-cause analysis investigation processes (analogous to accident investigation) and the institution of remedial action in many cases. The scheme facilitated preventive action in possible disease cases, and investigation and remedial action for early disease cases.

In practice, illnesses reported as possible cases were dealt with at local level between the OH department, hygienist and the relevant supervisor or manager. Those cases designated early cases were investigated or dealt with at site-manager level to determine appropriate remedial action. And those cases designated as advanced were to be the subject of investigation by senior

management with a view to understanding failures of systems that should have prevented them.

The scheme remains in use at Ingwe Coal Corporation and continues to be a valuable tool for the organisation in reporting, responding to, and ultimately preventing occupational illnesses. Recent statistical evaluation by one of my former colleagues showed the diagnostic categories (for NIHL) to be associated reliably with cumulative noise exposure¹. Ingwe’s parent corporation, BHP Billiton, has acknowledged the scheme as benchmark practice within its global operations².

CAUSE-BASED REPORTING

As a separate step, and with no less dramatic results in terms of response from the organisation, we scrapped

Box 2: The criteria for assessment

Noise-induced hearing loss (NIHL)

Advanced NIHL

■ Greater than 25dB average binaural hearing loss at the frequencies 0.5kHz, 1kHz, 2kHz and 3kHz, confirmed on diagnostic audiology. Must have occupational noise exposure history (but not necessarily at reporting site), preferably with objective hygiene information.

Early NIHL

■ Bilateral pattern of hearing loss, maximal loss at 3kHz or 4kHz, which must be greater than or equal to 25dB at that frequency, averaged for the two ears. Hearing loss must be less than for advanced NIHL (see above). A history of noise exposure must be present, preferably with objective hygiene information, but this does not have to be at the current employer. Audiometry is sufficient for this diagnosis, provided the audiometer and tester are competent.

Possible NIHL

■ Cases that look atypical or are diagnostic uncertainties will be classified here. Mixed conductive and sensorineural hearing loss cases, unilateral hearing loss and cases with no history of occupational exposure will fall into this category.
 ■ Cases that look typical in pattern, but have not crossed the 25dB threshold for reporting as early disease will also fall into this category.

Occupational asthma

Advanced asthma

■ A known agent must be suspected, identified and occupational exposure confirmed, preferably by hygiene measurement. Causative agents are not necessarily restricted to compensation-related lists of agents. Pulmonologist confirmation of diagnosis is required. Significant functional impairment on objective lung function testing (especially if irreversible changes) or work limitation (usually a job change recommendation) should be present. Asthma that needs steroids for control should be classified here.

Early asthma

■ A known agent must be identified, with confirmed occupational exposure, preferably by hygiene measurement. Confirmation of diagnosis by a respiratory physician is not required, but there must be evidence of objective reversible lung function changes across shifts, which improve on removal from exposure. Asthma that is controllable with prescribed-as-needed B₂-agonists can be classified here.

Possible asthma

■ Cases with a suspected or potential agent (unconfirmed exposure), or unidentified agent but possible workplace association, irrespective of severity.
 ■ Cases where the occupational physician suspects diagnosis but conclusive objective lung function changes are absent.

diagnosis-based reporting and classification in favour of cause-based reporting. In so doing, we turned disease reporting on its head and made it instantly relevant and accessible to operations.

Previously, we had a plethora of single cases with obscure names that the corporation and its managers claimed to understand. Periodically, a few statistics would be compiled on a slide for a management presentation and everyone would nod sagely at the appropriate time. However, when disease reports were viewed from the perspective of the causative agents the picture suddenly changed. Gone were a myriad of diagnoses, replaced by five simple categories: physical agents (including noise); inorganic dusts; chemical agents; biological agents; and psychosocial stressors.

Regardless of whether a case was asthma or dermatitis, it was reported under the appropriate

agent class. Suddenly, management had a clear picture of how its operations were responsible for harm and where its efforts needed to be concentrated. As a result, the company instituted a major campaign aimed at noise reduction across all operations (this focused on engineering solutions given that a hearing conservation programme was already in place).

IMPLICATIONS

The lessons from the adoption of these relatively simple measures have been dramatic for me as an occupational physician. Of prime importance is that if one's data is unreliable, no one takes you seriously. Secondly, if we are not speaking in a language that business understands, we will forever find ourselves outsiders, shouting on the sidelines but not as true players on the field. How do we

get industry to understand and take ownership of the occupational disease burden? Many of the issues we faced in the South African coalmining situation are apparent in the UK: national reporting data characterised by under-reporting³, underpinned by schemes that remain disease-focused and based on medical diagnoses rather than occupational causation.

This situation is not unique to the UK, and the International Labour Organization (ILO) has reported on the difficulties of estimating the occupational disease burden worldwide⁴. Current systems do not distinguish between differing levels of severity of occupational conditions, so relatively minor conditions are indistinguishable from more serious ones. There is no mechanism for reporting cases of suspected occupational illness, as recommended by Article 3 of ILO protocol 155 of 2002⁵, to allow preventive activity. It is noteworthy that the same protocol outlines a reporting classification framework that is primarily cause-based.

In the UK, it is impossible to tell from current data whether the explosion of cases of musculoskeletal and mental health conditions represents serious new conditions or a group of conditions previously unreported because of relative low severity. Variability in diagnosis, categorisation and reporting of conditions is problematic. A paper published in 2005 reported unexplained fluctuations in reporting of certain musculoskeletal conditions from the Occupational Physicians Reporting Activity (OPRA) network⁶, while mental health reporting was criticised and a scheme proposed to address the perceived flaws⁷. Similarly, a Health and Safety Laboratory workshop identified lack of consensus on definitions for COPD as a barrier to reporting⁸. Finally, although good agreement has been reported between expert physicians in diagnosing occupational asthma, non-specialists agree less when evaluating serial peak flow measurement⁹ and clinical case data¹⁰. Underreporting of occupational asthma cases to the Surveillance of Work-Related and Occupational Respiratory Disease (SWORD) scheme has been estimated at 60%¹¹. How will the various reporting schemes hold up when they are further opened up to general practitioner reporters?

In addition to these issues, there is the added barrier of litigation and the sometimes adversarial nature of employer–employee relations in the UK which, by a variety of mechanisms, encourages non-discovery and discourages reporting of occupational conditions. There appears a tendency to allow external parties, such as insurers, courts and state authorities to make definitive decisions on occupational conditions, with resulting delay in action at the workplace, not to mention undermining the standing and authority of occupational physicians.

These difficulties do not, however, absolve occupational physicians of our primary duty to protect workers. Rather they should inspire us to devise creative, practical ways to overcome these barriers. A simple,

CONCLUSIONS

- **Disease** incidence estimation in the UK and internationally is hampered by weaknesses in many reporting schemes, including poor diagnosis and a lack of incentives to report
- **Occupational** diseases reporting could be more effective – and more meaningful to managers – if instead of being determined by specific disease labels it was refocused on work causes
- **A cause-based** reporting scheme incorporating disease severity would allow businesses to highlight the areas of their activities that were causing harm and allow an incremental response
- **A practical** scheme developed for a mining business in South Africa incorporating these principles has worked in practice and has focused minds on investigation and prevention; its simplicity has allowed local managers to address failures in systems that should now prevent recurrence of exposures

accessible framework for occupational disease reporting would be a step in the right direction. ■

Dr Anthony Bell is an occupational physician in a private consultancy in London.

Notes

- 1 Dr S Goosen, BHP Billiton, personal communication.
- 2 Dr S Goosen, BHP Billiton, personal communication.
- 3 Health and Safety Executive. *Improving health and safety in the construction industry. NAO report by the Comptroller and Auditor General, HC 531 Session 2003–04: 12 May 2004.*
- 4 Leigh J, Macaskill P, Kuosma E, Mandryk J. *Global Burden of Disease and Injury Due to Occupational Factors. Epidemiology 1999; 10: 626–631.*
- 5 P155 Protocol of 2002 to the Occupational Safety and Health Convention, 1981. Geneva: ILO, June 2002.
- 8 Occupational Respiratory Diseases: Review of HSE's strategy: HSL Workshop, Manchester 27–28 July 2004, www.hse.gov.uk/aboutus/hsc/iacs/acts/watch/051005/15annexe2.pdf
- 7 Kalman C. *Report of a system for diagnosis, categorizing and recording occupational mental ill health. Occupational Medicine 2004; 54: 464–468.*
- 6 Chen Y, Turner S et al. *A study of work-related musculoskeletal case reports to The Health and Occupation Reporting network (THOR) from 2002 to 2003. Occupational Medicine 2005; 55: 268–274.*
- 9 Newman Taylor AJ, Nicholson PJ et al. *Guidelines for the prevention, identification and management of occupational asthma: Evidence review and recommendations. London: British Occupational Health Research Foundation, 2004.*
- 10 Elder D, Abramson M et al. *Surveillance of Australian workplace Based Respiratory Events (SABRE): notifications for the first 3.5 years and validation of occupational asthma cases. Occupational Medicine 2004; 54: 395–399.*
- 11 Bradshaw LM, Henson M et al. *Occupational lung disease. Diagnosis and communication – fact or fiction? Buxton: Health and Safety Laboratory, www.hsl.gov.uk/cwh/poster3.pdf*