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**Title:** Serial PEF measurements detect occupational alveolitis and occupational asthma due to metal-working fluid

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**Body:** Introduction Serial measurements of Peak Expiratory Flow (PEF) are the most appropriate and available method for confirming occupational asthma. Changes in PEF might also occur in alveolitis. Aims To compare work-related changes in PEF between workers with allergic alveolitis and occupational asthma with exposure to the same metal-working fluid aerosols. Methods Symptomatic workers with restday improvement from an engineering factory were asked to measure PEF 8 times daily for 4 weeks at home and at work before remedial action in the workplace. Allergic alveolitis was diagnosed by an expert panel from combinations of systemic symptoms with breathlessness, audible crackles in the lungs, CXR or CT scan showing compatible interstitial changes and reduced DLCO. Occupational asthma was diagnosed from work-related wheeze or breathlessness and confirmed with physiological tests including serial PEF measurements. The Oasys PEF plotter was used to calculate differences between rest and workdays for mean PEF, diurnal variation and the scores used to confirm occupational asthma (Oasys, ABC and timepoint). Results

Table 1

| | Occupational alveolitis n=15 | Occupational asthma n=39 | p |
|---|---|---|---|
| Mean difference in PEF rest-workdays (litres/min)(SD) | 22.5 (30.8) | 26.1 (26.9) | 0.5 |
| Mean diurnal variation on workdays (% mean)(SD) | 14.9 (7.7) | 14.9 (6.0) | 0.8 |
| Mean diurnal variation on restdays (% mean)(SD) | 9.7 (6.9) | 11.6 (5.9) | 0.2 |
| % with mean workday diurnal variation >20% predicted | 20 | 23.1 | 0.8 |

| | | | |
|---|---|---|---|
| Oasys score >2.5 (%) | 53.3 | 71.8 | 0.2 |
| ABC score >15 (%) | 46.7 | 57.9 | 0.5 |
| Positive timepoint analysis (%) | 66.7 | 69.2 | 0.9 |

Conclusion Changes in serial PEF measurements are similar in workers with occupational allergic alveolitis and occupational asthma.