reduce the risk of myocardial infarction "could easily be as little as 3%"?

Finally, Ramsay and colleagues were surprised that in our study the control diet induced an increase in "baseline" cholesterol values. The habitual diet of people living in southern Italy is a typical example of the "Mediterranean diet," which is generally considered to be a model hypocholesterolaemic diet. Moreover, patients referred to our lipid clinic are often already taking a therapeutic diet and their cholesterol concentrations cannot be considered to be true baseline values. A standard procedure of good medical research is to start intervention studies with a run in period, in which any treatment is stopped. This is what we did. Moreover, as consumption of saturated fat in our control diet was "only" 14% we predict that if our test diets were used in any northern European country or in the United States (where habitual consumption of saturated fat is usually higher) their efficacy would be even more pronounced.

GABRIELE RICCARDI
ANGELA A RIVELLESE
OLGA VACCARO

Institute of Internal Medicine and Metabolic Diseases,
Federico II University—Medical School,
80131 Naples,
Italy

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Accuracy of peak flow meters

Don't interchange devices

EDITOR,—Peter D Sly and colleagues' paper highlights a common mistake in the management of asthma—namely, interchanging devices measuring peak flow.¹ In 1990 colleagues and I designed a small study (unpublished) to investigate possible discrepancies between readings obtained with Wright mini peak flow meters and standard Wright peak flow meters. It was undertaken because of the lack of consensus in the literature regarding the comparability of the two devices and after a suggestion that regression analyses commonly used in previous research were inappropriate for comparing the results of two measurement techniques. In addition, earlier comparisons had looked primarily at flow ranges appropriate to adults.

Peak flows were recorded from 186 children, who used both devices. In the laboratory 61 Wright mini peak flow meters were calibrated against known flows with a spirometer. Limits of agreement were then calculated for clinical and laboratory data and showed that the two devices may differ by more than 100 litres/min. The greatest percentage discrepancy occurred at lower flow rates, when the Wright mini peak flow meter tended to read higher flow values than the standard Wright peak flow meter.

As the two meters do not give comparable peak flow measurements it is inappropriate to monitor control of asthma with the Wright mini peak flow meter by using centile charts that have been created by using the standard Wright peak flow meter—a common practice. Wright mini peak flow meters are widely used in the home, in general practice, and at the bedside in hospital. Until a standard measure of flow is available, new centile charts for children need to be devised to reflect this widespread use of the Wright mini peak flow meter. Inaccuracy among meters is to be distin-

guished from consistent measurements made with a single device. What exactly a particular variety of flow meter measures is to some degree irrelevant when the meter is used in self management plans; in such plans change in that measure is of prime importance even if that measure is not peak flow.

BRUCE MCKENZIE

Chesterfield and North Derbyshire
Royal Hospital,
Chesterfield,
Derbyshire S44 5BL

- 1 Sly PD, Cahill P, Willet K, Burton P. Accuracy of mini peak flow meters in indicating changes in lung function in children with asthma. *BMJ* 1994;308:572-4. (26 February.)

Readings vary between measurements

EDITOR,—Martin R Miller and Philip H Ouanjer point out that peak flow meters may underestimate or overestimate peak expiratory flow rates at different parts of their ranges.¹ A paper in the same issue suggests that clinically important reductions in peak expiratory flow rates are not always detected by meters.² Neither article mentions within patient and temporal repeatability, which are important confounding factors in the interpretation of peak expiratory flow rates.

Over three months 33 children with established asthma were issued with a mini Wright peak flow meter and diaries for recording their peak expiratory flow rate. After supervised instruction they were asked to record their first three readings of peak expiratory flow rate in the morning and last thing at night. They also recorded any symptoms and what medication they required each day. Twenty one children completed the diaries for five weeks, which allowed them a two week run in period to learn the technique.

The median age of the children was 10 (range 6-15), and the asthma varied from mild to severe, with peak flow readings from 90 to 500 l/min. None of the children had an exacerbation during the three week study period. Coefficients of repeatability were calculated³ with one way analysis of variance for the three early morning measurements on day 15; the best of three morning measurements on days 15, 16, and 17; and the best of three measurements on days 15, 22, and 29. The coefficients were, respectively, 37 l/min, 50 l/min, and 54 l/min. The coefficient of repeatability encompasses 95% of the differences between repeated measurements; the above results for within patient repeatability and repeatability over time show how dangerous it is to rely on peak flow readings in asthma self management plans.

T C BARRETT
Research fellow

Department of Clinical Genetics,
Birmingham Maternity Hospital,
Birmingham B15 2TG

Children's Hospital,
Birmingham B16 8ET

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Lack of a standard meter is bad for patients

EDITOR,—Peter D Sly and colleagues' article discussing peak flow and spirometry highlights the need for standards on peak flow, the absence of which prevent accurate peak flow measurements for British patients with asthma.¹ One good standard has been published in the United States.² By refusing to accept this standard in Europe we waste time, cause unnecessary delay, and possibly endanger patients.³

A peak flow meter is not a spirometer. It

measures only a single variable, which makes quality assurance difficult. Clinically, measurements of more lung function variables are usually required to detect important changes. Practitioners require accuracy and standardised measurements from any brand of instrument, in any location. Spirometers fulfil these essential criteria; peak flow meters do not. Peak flow meters are designed for use at home. Patients should always take their peak flow meter to the asthma clinic to check their test technique, the measurements, and for obvious damage. The meter should be replaced every three years. In the clinic it is vital to observe routine calibration protocols for all measuring instruments. Peak flow meters should be returned for a calibration check or replaced annually. The cost is small compared with the cost of wrong medicines or unnecessary morbidity.

Vitalograph peak flow meters conform to all standards: those of the British Department of Health⁴ and the American national asthma education programme and draft standards in other countries, including Australia. Without exception, standards require readings obtained with peak flow meters to correlate closely with those obtained with a pneumotachygraph; this was intended for the Wright peak flow meter (with the big round dial), which, sadly, is little used today. The original Wright peak flow meter had long been regarded as a standard in Britain before high speed sampling and test equipment showed errors of up to 15%.⁵ Numerous studies globally, which have used a wide variety of test equipment, have shown similar conclusions.

The Department of Health, understandably, insists that we should resist change until a European standard has been developed; this is a long way off. Adopting the world's best standard and then improving it is a far more rational approach, bringing benefits immediately to patients and practitioners.

BERNARD GARBE
Managing director

Vitalograph,
Buckingham MK18 1SW

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Management of breast cancer

EDITOR,—A M Chouillet and colleagues report appreciable departures from consensus guidelines in the management of breast cancer in the Thames regions.¹ We are concerned that the study made no detailed reference to the United Kingdom's breast screening programme, which has been screening women in England since 1988, although evaluation of the screening programme was cited as an important reason for monitoring the management of breast cancer. The programme has rigorous quality standards relating to the treatment and follow up of breast cancer. As professionals working in breast screening we would be interested to know what proportion of women included in the 1990 study group were detected by screening and how this subgroup compared with the main group in terms of the more general consensus guidelines used in the Thames study.

The paper suggests that Chouillet and colleagues made a fairly unilateral decision to investigate the implementation of treatment guidelines. We wonder how the clinicians responsible for managing breast cancer have responded to the results. The study provoked a predictable reaction in the