The CHD mortality in North Karelia declined by 60% over the 20-year period compared to a 50% decrease in Finland as a whole. Further analysis showed that the decrease in eastern Finland (including North Karelia) was due to a reduction in the incidence of first and subsequent coronary events. In contrast, the decrease in south-western Finland was mainly due to a decline in the case-fatality rate. The changes in CHD mortality were consistent with the observed changes in the three classical risk factors. The conclusions were that a comprehensive, community-based scientific programme can have a significant impact on risk factors and lifestyles, and that a national demonstration project such as the North Karelia Project can be a powerful tool for developing nationwide initiatives in chronic disease prevention.

The North Karelia Project is relevant for Scotland for two reasons. Firstly, Scotland still has a very high CHD mortality rate; the rate peaked in the 1970s but the decline is slower than in other developed countries such as Australia and the USA. Therefore, we are looking for ways to accelerate this decline. This brings us to the second reason. The North Karelia Project shows that the principle of blending a bottom-up approach (with action by a community) with a top-down approach (of policy-making and environmental changes) is a powerful tool. However, it is important not to follow mechanistically what was done in North Karelia but to use it as evidence of what is possible.

In Scotland, there is renewed interest in the North Karelia Project. This has been evident for some time but has been given an added impetus by the government’s Green Paper (discussion document) on public health entitled ‘Working together for a healthier Scotland’. This points the way for national government, local authorities, health boards, national and local organizations, voluntary bodies, communities, and individuals to work together for improving the health of the public. There is recognition that public bodies (including national government) have roles and responsibilities in improving the public’s health and decreasing health inequalities. The public’s health depends on many determinants and not just their individual lifestyle. Concentrating only on one person’s lifestyle is unlikely to succeed and is also seen as ‘victim-blaming’. This is exactly what the North Karelia Project has taught us and why it became important first in the WHO–European Comprehensive Cardiovascular Community Control Programmes (CCCCCP), and later in the European Countrywide Intervention for Prevention of Non-communicable Diseases (CINDD).

Community health projects in developing countries have taught the developed countries a lot about improving people’s health, and empowering people and communities. Perhaps there are lessons for developing countries as well, as they face an epidemic of CHD.

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H. S. KOHLI

Letter from Berlin

FRAUD IN SCIENCE

Last year, the academic community in Germany was thrown into turmoil by a widely publicized case in which a national commission of university scholars and officials found two eminent German oncologists, working together over several years, guilty of multiple instances of fraud. This unethical behaviour was apparently carried out at various institutions, and resulted in at least 37 articles, several of which appeared in some of the most prestigious scientific journals. This ‘successful’ work was the basis for the highly reputable standing of both scientists within the national and international scientific community and led to the appointment of one as head of the Department of Medicine at the University of Ulm and the other as head of the Department of Molecular Medicine at the University of Liebe.

Both had distinguished themselves in prolonged postdoctoral fellowships at Harvard University, certainly had a solid scientific background, and were well trained to carry out sound scientific research. The matter came to light after two former postdoctoral fellows made allegations of fraud which were corroborated by further evidence from other sources. These allegations resulted in a mud-slinging competition between the former colleagues, each accusing the other of fabricating the false data. Currently, both are suspended from their positions, but due to some legal loopholes continue to draw their salaries. Investigations by the committee appointed to clear up the mess revealed that the two authors had produced the fake data by pasting, cutting, repasting, and recutting western blots, northern blots, gel-shift assays, dot blots, and polymerase chain reaction traces. Some of this material was repeatedly used in many of their fraudulent publications. Apart from the fact that this act of forgery raises a host of questions on how these papers survived the rigorous peer-review system of the prestigious journals in question, this case also spawned discussion on several interesting issues, including to what extent co-authors must bear the responsibility for this work. Certainly many of them were innocently drawn into the affair. These included several young investigators who may have been pressed into these bogus publications without fully understanding the mechanisms of research. Several of them are currently without a job and are unlikely to find employment in scientific institutions in the future.

After extensive consultation, a committee appointed by the German Research Society (Deutsche Forschungsgemeinschaft), passed an exhaustive list of measures that should now serve to ensure ‘good research practice’ at German research institutions. The 16-point programme deals with specific aspects of research
including the maintenance of primary data over a 10-year period, details on how to keep a laboratory notebook, and the authorship of scientific articles. Most important, formal adoption of these guidelines was made mandatory for future public funding of research at these institutions. Interestingly, the committee also criticized the inadvertent emphasis given to 'high-impact' publications and the general 'publish-or-perish' attitude that appears to be a major motive for deceitful and unethical behaviour in science. It is difficult to see how this attitude can be changed without withdrawing the major motivation for high-quality science—seeing your name in print in a prestigious scientific journal.

Despite the uproar, fraudulent science will continue. Recently, another case of extensive data manipulation was discovered in Cologne, and has resulted in the premature 'retirement' of a British researcher who headed a research team at the prestigious

German Max-Planck Research Institute.\(^{1}\) It will be up to the scientific community to cultivate a high degree of caution and make sure that 'good scientific practice' is indeed followed in the laboratories. This is not only a question of culture but also a question of responsibility, especially under conditions where sources for research are limited and the squandering of public money on fraudulent or questionable research is more than what society can afford.

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ARYA M. SHARMA

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**Letter from North America**

GASTRO-OESOPHAGEAL REFLUX—A WIDESPREAD MEDICAL CONUNDRUM

Gastro-oesophageal reflux is causing Americans to visit emergency departments many times each year with symptoms of crushing chest pain, anxiety and fear of heart attack. Gastro-oesophageal reflux disease (GERD), believed to affect 40 million Americans, refers to the pathological consequences from reflux of gastric acid into the oesophagus. Treated with antacids, lifestyle modifications, antisecretory drugs and when indicated, surgery, this widely misunderstood condition is currently at the forefront of public interest. The antisecretory drug market, worth US$ 6 billion, is itself reaching the public through newsprint and electronic advertising with non-prescription products of H, blockers and proton pump inhibitors to prevent symptoms. Very little, if any, attention has been given to public education on the nature of the problem.

Widespread acceptance of endoscopy by the public and the increasing use of oesophageal motility studies and 24-hour pH monitoring are leading to overall improvement in the management of the problem but only by a few specialists in gastroenterology and surgeons trained to manage benign oesophageal conditions. The conundrum is in separating those individuals who have occasional reflux from those who have the disease and need special investigations and treatment. A recent national poll indicates that 19 million Americans have symptoms of GERD, including heartburn at least twice a week that can be relieved by medication. This incidence may be an underestimate since GERD may be asymptomatic. Oesophageal spasm and pain, masquerading as angina or myocardial infarction, cause patients to visit emergency care centres and account for 75 000 to 150 000 cardiac catheterizations a year that turn out to be normal. Of the 6 million people who visit emergency departments with chest pain or similar symptoms per year, 10%–20% are estimated to have GERD. These patients are frequently made to undergo a stress test, echocardiogram, angiogram and other expensive tests and then told they do not have heart disease; they return for follow up and after two or three months may have another cardiac work up. It is often one year or more before GERD is diagnosed and treatment instituted.

GERD may cause or contribute to several non-digestive problems—70% of the country's 12 million asthmatics as well as 80% of patients with chronic hoarseness are believed to have GERD. It is also associated with chronic cough, dental erosion and chronic upper abdominal pain. Some medications, such as calcium channel blockers, asthma medications and birth control pills can aggravate GERD—a fact not known to patients and physicians alike. According to one national authority, the cost of misdiagnosing GERD amounts to about US$ 750.

In a society that trivializes heartburn and 'stomach upsets', many learn to live with the disease while they overdose medications, continue to treat themselves and then turn to health care providers who also misunderstand the disease, leaving patients to develop oesophageal ulceration, strictures, bleeding, erosive oesophagitis and Barrett's oesophagus, a pre-cancerous condition.

Few areas in medicine have undergone such innovative changes as that of the upper gastrointestinal tract. The discovery in the early 1990s of *Helicobacter pylori* causing peptic ulcers and the relief of gastro-oesophageal reflux by H, blockers was known well before the disease was defined. As physicians are getting educated about the widespread incidence of GERD, legislation is being introduced to help those with GERD, masquerading as heart attack, being refused coverage for emergency room visits. Claims for GERD-related problems are frequently denied, on the basis that they could be treated as non-emergencies. Some states already have a law, based on a 'prudent' layperson’s definition of an emergency, that requires retrospective payment of emergency care claims for GERD.

Clearly, what is needed is educating the public and the wide spectrum of physicians, and other health care providers.

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