process; and clinical governance will need to include ethics within its remit.

Most published data on clinical ethics committees (often called healthcare ethics committees) come from the United States, where such committees have existed since the early 1980s. The Joint Commission on Accreditation of Healthcare Organisations requires hospitals to have a mechanism for addressing ethical issues in providing patient care, and it recommends a multidisciplinary ethics committee.[3] Nursing homes and long term care institutions also have developed committees in the United States.[4]

Clinical ethics committees in the United States typically perform one or more of three functions[5]: *(a)* individual case consultations in response to requests from clinicians or occasionally from patients or their families; *(b)* providing ethical input into hospital policies and developing guidelines; and *(c)* education of health professionals within the institution. In practice, case consultation is more likely to be carried out by individual ethicists or increasingly by small multidisciplinary teams which may include ethics committee members as part of the team.[6]

Clinical ethics committees, and other ethics support services, are developing in Europe and Australia. In the Netherlands clinical ethics committees are usually combined with research ethics committees, and in Australia many research ethics committees report that they also provide ethics advice on clinical issues.[7] In Germany the Christian association of hospitals (representing about a third of all German hospitals) has recommended that all hospitals in the association should have a clinical ethics committee.[8]

There are few published data on United Kingdom clinical ethics committees, though hospital committees have been described in London, Oxford,[9] and Nottingham[10] and more recently in a small NHS trust including a general practitioner hospital and community services.[11] We are currently studying the position of clinical ethics support services in the United Kingdom. Preliminary results suggest there are at least 20 committees throughout the United Kingdom and several NHS trusts are considering establishing a committee in the near future. United Kingdom committees usually report directly to the trust board, or are a subcommittee of another hospital committee. Most are in acute trusts, although there are a few in community trusts and at least one in an ambulance trust.

Established committees tend to follow the North American model. Case consultation is less developed than in the United States, and most committees in the United Kingdom see ethical input into policy and guidelines as their main function. Indeed, American experience suggests that a model other than a committee is required for case consultation, and some committees in the United Kingdom are looking at this.

Clinical ethics committees can change clinical practice through policy development and case consultation, and indirectly through education and raising awareness of ethical issues throughout the trust. But evaluation is needed to determine whether these committees are influencing clinical practice. There have been no rigorous studies in the United States evaluating healthcare ethics committees and ethics consultation,[12] possibly because of the disparate nature of these services. If these committees are to develop effectively, they will need to communicate closely with each other to share experience and to establish the basis for systematic evaluation and research.

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1 General Medical Council. *Tomorrow's doctors.* London: GMC, 1993.
2 Hope T, Hicks N, Reynolds DJM, Crisp R, Griffiths S. Rationing and the health authority. *BMJ* 1998;317:1067-9.
3 Joint Commission on Accreditation of Healthcare Organisations. *Accreditation manual for hospitals.* Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organisations, 1992.
4 Meece K. Long term care bioethics committees: a cooperative model. In Spicker SF, ed. *The healthcare ethics committee experience.* Malabar: Kreiger, 1998:380-4.
5 Blake DC. The hospital ethics committee. Health care's moral conscience or white elephant? *Hastings Center Report* 1992; 6-11.
6 La Puma J, Toulmin SE. Ethics consultants and ethics committees. *Arch Intern Med* 1989;149:1109-12.
7 Macneill PM, Walters J, Webster IW. Ethics decision making in Australian hospitals. *Med J Aust* 1994;160:63-5.
8 Katholischer Krankenhausverband Deutschlands e V. *Ethik-Kommittee im Krankenhaus.* Freiburg: KKD, 1997.
9 Meslin E, Rayner C, Larcher V,Hope T, Savulescu J. Hospital ethics committees in the UK. *HEC Forum* 1996;8:301-15.
10 Watson AR. An ethics of clinical practice committee: should every hospital have one? *Proc R Coll Physicians Edinb* 1999;29:335-7.
11 Wood K, Ellis S. A clinical ethics committee in a small health services trust. *J Med Ethics* 1999;25:420.
12 Tulskey JA, Fox E. Evaluating ethics consultation: framing the questions. *J Clin Ethics* 1996;7:109-15.

Saving lives during extreme weather in summer

Interventions from local health agencies and doctors can reduce mortality

Interest in the impact of weather on human health has grown enormously, largely due to predictions that over the next century temperatures will rise. A report in this week's journal (p 670) indicates that among Europeans any increases in mortality related to heat will be only temporary.[1] Other studies, however, in the United States and China have found that there will be a sharp increase in mortality related to heat if the globe warms as expected.[2 3]

In some ways the argument is moot because it is clear that heat is already an important killer in many parts of the world. Weather variability, rather than heat intensity, is the most important factor defining human sensitivity to heat.[4] People living in areas where summer climates are highly variable are ill adapted to extreme heat, mainly because it occurs irregularly. Thus, there are large increases in mortality when an intense heatwave occurs in temperate cities, such as Chicago, New York, Rome, Shanghai, and Athens. One of the difficulties in assessing the impact of potential global warming on health is the lack of understanding regarding the future variability of the climate. If

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variability decreases, mortality associated with heat might not increase if the world is warmer overall. However, if variability increases or stays constant the chances of increased mortality are much greater.

There has been a growing impetus to develop warning systems that would allow urban health agencies and local meteorological offices to issue advisories to the public if a dangerous heatwave is imminent.[5 6] This has led to collaboration to construct heat and health watch warning systems for large cities believed to be vulnerable throughout the world. This collaboration includes partners such as the World Meteorological Organization, the World Health Organization, the United Nations Environment Programme, the US Environmental Protection Agency, and the University of Delaware. The partnership is developing warning systems for Rome, Shanghai, Toronto, and cities in the United States.

These heat and health warning systems are unlike other systems because they take into account the climate, social structure, and urban landscape of each city. Thus, the systems account for the fact that from one city to the next people react differently to the weather. In the few places where operational watch and warning systems exist, the criteria for issuing a heat advisory are often based on arbitrary weather elements that may not relate to any particular human response (such as an apparent temperature exceeding 41°C). Coordination between the local weather service, which issues the advisory, and the local health agency is often far from optimal.[7] The systems currently under development acknowledge that it is an entire "umbrella of air" rather than particular weather elements that has the potential to harm health. They identify weather situations that cause stress, rather than just temperature, humidity, or other variables that might be part of an oppressive situation.

Although the thresholds under which warnings are issued vary from city to city, there is a consistency to the construction of the system. Firstly, historical relations between weather and mortality associated with heat are developed for each locale. Secondly, the most significant weather conditions that lead to increases in mortality associated with heat are identified. Next, weather forecasts for the next 48 hours are incorporated into the model, and if weather conditions that have historically led to increased mortality are predicted then a health advisory is triggered. Once the predictive system is running, a set of intervention plans is finalised to mitigate any damage to health if an advisory is issued. Finally, a method is developed to check the effectiveness of the system in saving lives.

In Philadelphia, Pennsylvania, which has an effective intervention system, the Department of Public Health takes steps every time a heat emergency is declared.[8] Firstly, a contact person at the health department informs media outlets that the health commissioner has declared a heat emergency. The media then broadcasts information on how to reduce the likelihood of a heat related illness, such as staying in an air conditioned place if possible and drinking plenty of fluids. In addition, the city has a "buddy system" in which a designated person in each street checks on elderly people and ill people. The buddies are trained by the Department of Public Health; they provide support and advice and call an ambulance if necessary. The city also staffs a "heatline," a special telephone number broadcast by the media to be used by people who are becoming ill from the heat. The department warns local utility companies not to terminate service to anyone during the heat emergency.

The system must be accurate to ensure that there are few false positives (that a heat warning was issued when it was not necessary) or even worse, false negatives (a heat warning was not called but should have been, leading to unexpected deaths). Plans are being developed to build local systems worldwide. It is imperative that health professionals become familiar with the impact of heat on health and learn to coordinate efforts with local health agencies to keep morbidity and mortality related to heat to a minimum.

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1 Keatinge WR, Donaldson GC, Cordioli E, Martinelli M, Kunst AE, Mackenbach JP, et al. Heat related mortality in warm and cold regions of Europe: observational study. *BMJ* 2000;321:670-3.
2 Kalkstein LS, Greene JS. An evaluation of climate/mortality relationships in large U.S. cities and the possible impacts of a climate change. *Environ Health Perspect* 1997;105:84-93.
3 McMichael AJ, Haines A, Slooff R, Kovats S, eds. *Climate change and human health.* Geneva: World Health Organization, World Meteorological Organization, United Nations Environment Programme, 1996.
4 Kalkstein LS. Biometeorology—looking at the links between weather, climate and health. *Biometeorology Bull* 2000;5:9-18.
5 Predicting heat worldwide. *Environ Health Perspect* 1999;107:238-44A.
6 Guest CS, Willson K, Woodward AJ, Hennessy K, Kalkstein LS, Skinner C, et al. Climate and mortality in Australia: retrospective study, 1979-1990, and predicted impacts in five major cities in 2030. *Climate Res* 1999;13:1-15.
7 National Oceanic and Atmospheric Administration. Natural Disaster Survey Report, July 1995 heat wave. Silver Spring, MD: US Department of Commerce, NOAA, National Weather Service, 1995.
8 Kalkstein LS, Jamason PF, Greene JS, Libby J, Robinson L. The Philadelphia hot weather-health watch/warning system: development and application, summer 1995. *Bull Am Meteorological Soc* 1996;77: 1519-28.

Can islet cell transplantation treat diabetes?

Small studies show promise, now multicentre trials are going ahead

Type 1 diabetes mellitus is a major burden on patients and healthcare economies. The early identification of patients at risk of developing chronic complications would allow timely intervention thus reducing complications, improving the quality of life, prolonging life expectancy, and lowering the cost of treatment. The main determinant of developing chronic complications is prolonged exposure to hyperglycaemia.[1] There is no doubt that intensive insulin regimens can reduce the onset and progression of complications from diabetes but they are non-physiological and have an increased risk of causing

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