Carpeting Hospital Wards

Florence Nightingale wrote in 1859 that "For a sick room a carpet is perhaps the worst expedient which could by any possibility have been invented. . . . A dirty carpet literally infects the room." More recently this view was quoted by a modern American hospital hygienist, Bertha Y. Litsky, who if not frankly opposed to wall-to-wall carpeting in hospital wards was at least suspicious of its sanitary advisability. Yet such carpeting has been coming steadily into vogue for some years. Compared with any kind of polished floor it is much quieter, safer for any patient liable to slip, preferred by nurses' feet, and variously described as more attractive, less institutional, and cosier. Possible drawbacks are cost, the greater effort required to push beds and trolleys around, and staining by spillage (though in fact carpets made of water-repellent synthetic fibre are apparently not easily stained and are easily cleaned). The balance of these factors seems decidedly in favour of carpeting, but this balance would be reversed if it were shown that there is a greater hazard of infection from air-borne particles of dust.

Most investigators have concluded that there is no such hazard; indeed tiled or other polished floors have suffered by comparison. Shaffer and Key6 did a long series of slit sampler counts of the air of three pairs of wards in an American hospital, respectively tiled and floored with wool and acrilon carpet, and obtained lower counts, both total and of Staphylococcus aureus, in the carpeted wards. Rylander et al.3 compared wards in Stockholm with a vinyl plastic floor and a synthetic needlefelt carpet; the latter yielded fewer bacteria, and their numbers were more reduced by vacuum cleaning than those on the tiled floor. Air counts were also lower, but "sizeable walking activity" raised these above the level from the tiled floor. Ayliffe et al.4 compared two surgical wards in a Birmingham hospital, one with vinyl flooring, the other covered with carpeting consisting of short nylon fibres on a water-resistant non-absorbent PVC base. Slit sampler counts were somewhat lower in the carpeted ward, and counts from contact plates applied directly to the floor were substantially lower, 5-1 colonies/cm² in contrast to 16-0 from the tiled floor. Moreover, the frequency of postoperative sepsis, particularly that due to Staph. aureus, though low in both wards, favoured the carpeted ward insofar as results from 569 operations in only four months can be rated as significant; the authors admit that this part of their study may need to be continued for far longer.

Other advocates of carpeting who have studied floors bacteriologically are Beattie6 and Pilsworth.6 The opponents or doubters include firstly Litsky, already quoted, who found a rapid build-up of bacteria in carpets and that walking on them and vacuum cleaning caused higher air counts than those from tiled flooring—she used what must have been an enormous sampler with a throughput of 1000 ft³/minute. Secondly, Anderson7 at the Communicable Disease Center, Atlanta, U.S.A., also observed a build-up of bacterial count in carpet for four weeks and found that vacuum cleaning reduced this little. He suggested that further investigations were needed to develop improved, economical techniques for maintaining hospital carpets as bacteriologically clean as possible.

Clearly differences in sampling technique go far to explain these discordant results. Low counts from carpets have been obtained by surface sampling and high by punching out a small area and dispersing its bacterial content in a blender. Discrepancies in air counts may also have a technical explanation. A commonsense view would be that the main bacterial population of a carpet is at the base of its fibres and is derived mainly from dust on shoes. Admittedly potential pathogens exist in such material, but they very rarely cause infection and anyhow are ubiquitous. The particulate matter most to be feared in hospitals is derived from bed clothes contaminated from the skin, secretions, or discharges of the patient in the bed. When infected dust of this kind is deposited on a polished floor it is easily disturbed by air currents. It may well be less mobile on a fabric, and be more thoroughly removed by vacuum cleaning—which of course should be carried out regularly, thoroughly, and with well-designed apparatus.

Weather and Eclampsia

The weather provides a topic of perennial comment, perhaps particularly in Britain. But with the marked decline of eclampsia here, no doctor could have detected in Britain the close relationship recently reported between this disorder and the weather. This rather surprising connexion was made in a study in Columbia confirming a local impression among obstetricians that eclampsia is more frequent on cool days.

All 156 women resident in the city of Cali who were discharged with a diagnosis of eclampsia over the five-year period 1966-70 were identified in the records of the one maternity hospital; a control group of 465 women represented a 1-in-50 sample of normal hospital deliveries, from which elective admissions were excluded. Details about these women and their deliveries were linked with data relating to rainfall, temperature, and relative humidity on the day of admission and also on the combined three days before admission.

It was found that the daily incidence of eclampsia per 1000 hospital deliveries rose with increasing relative humidity and with decreasing maximum temperature. Indeed there was more than a five-fold difference between the eclampsia rate on admission days with the extremes of maximum temperature.