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SPECIAL REPORT

Criminal prosecution for the death of patients

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The tragedy started after a seemingly insignificant call from the water distribution company. They informed me, the medical director of a small dialysis centre on the island of Curaçao, that an interruption of our water supply was scheduled. Haemodialysis centres require high volumes of water that is used for the dialysis treatment, so at first I welcomed this information. The scheduled interruption of water supply lasted several hours on 21 May 1996 (day 1) after which we did extra flushing of water to dispose of debris, changed the water filters and resumed haemodialysis treatment. The first signs of illnesses among the dialysis patients were noted more than three weeks later (day 25), when some patients had complaints of nausea and vomiting. Postdialysis hypercalcaemia was observed in 25 of the 28 patients. At that time the diagnosis 'hard water syndrome' due to a high dialysate calcium concentration was made when the water company indeed established a higher than usual calcium content in the water supply. The use of calcium and vitamin D supplements by the patients was stopped, but because the hypercalcaemia persisted in some patients, I closed the dialysis unit (day 40) and referred all the patients to the hospital for dialysis treatment. The symptoms of nausea, vomiting, as well as the hypercalcaemia disappeared after a single dialysis with low calcium dialysate. Nevertheless, unexpectedly, things only got worse and the following three weeks ten patients suffered severe progressive neurological symptoms with disorientation, myoclonus, convulsions and coma. Symptomatic treatment had no effect and these ten patients died from encephalopathy (day 40 to 95). Initially, no one had a clue what had caused this tragedy but after an extensive literature search it became obvious that the symptoms had to be caused by an outbreak of subacute aluminium intoxication due to an unusually high aluminium content of the water supply of the dialysis unit. The 18 survivors had only minor symptoms but had to be transferred to five dialysis clinics in the Netherlands for treatment.[1]

An investigation led by the health inspectorate, the water company and international water experts established the sequence of events. Patients on maintenance haemodialysis are parenterally exposed to 150 to 200 litres of water during each haemodialysis treatment. To ensure the water quality, water treatment systems with reverse osmosis filters have been used in most countries since the early 1980s. Some dialysis centres, however, continued using untreated tap water until the 1990s.[2] Curaçao, an island of the Netherlands Antilles, has no natural water resources and therefore its public drinking water supply depends totally on seawater desalination. Public city water was produced by distillation of seawater and had been used for haemodialysis without extended purification for more than 22 years in the local hospital. Therefore, no water treatment system was installed when the dialysis centre was opened in 1992. Because of corrosion problems, the ductile-iron pipes of the public city drinking water distribution mains were switched to other pipes with an inner layer of cement. Such a pipe was installed in the region that supplied the dialysis centre and a small shopping area. Aluminium and calcium are important constituents of cement. In this case the combination of a higher than usual aluminium content of the cement and a low calcium concentration of the tap water facilitated the leaching of calcium and aluminium from the cement-lining into the drinking water system of the dialysis unit, causing firstly the 'hard water syndrome' and because it takes time to develop after a delay in symptoms, secondly a subacute aluminum encephalopathy. Aluminium concentrations, first measured after the new cement-mortar pipe had been in use for six weeks, were 5 µg/l at the water plant and 690 µg/l at the dialysis centre.[3] Due to a tragic coincidence a new water treatment system that may have prevented the intoxication had been purchased, but installation was delayed for logistic reasons.

A criminal investigation was started and after an investigation by the local and Dutch Health Inspectorate, the Water Authorities from the Netherlands and the Pan American Health Organisation (invited by the government

because of the complexity of the case), the prosecutor initially decided to dismiss the case. After an appeal from the families of the patients who had died, the Court of Appeal, decided to pursue prosecution of my colleague and myself. Some patients also requested the prosecution of board members of the water utilities but at that time no legal provision was in force to allow this. From 6 June 1998 until January 1999 a preliminary judicial inquiry was performed in the Netherlands and on Curaçao. Thirteen experts were appointed by the investigative judge consisting of two water experts, two dialysis technicians and nine medical and nursing experts from four universities and three dialysis clinics on Curacao and in the Netherlands. After a cross-examination of the court-appointed experts by the prosecutor and the investigative judge, the prosecutor charged me of gross negligence and manslaughter for not testing the composition of the water after the construction at the water distribution network. A prison sentence with probation of six months was demanded. After a court hearing and a deliberation of ten hours, the District Court disagreed with the prosecutor on all issues, but nevertheless held me as the medical director guilty for performing dialysis without a water treatment system even though this was not an element of the charge. A prison sentence with probation of six months was demanded, together with the local maximum financial penalty (6500 US dollars) for these cases. My colleague was acquitted because he was not responsible for the water quality. I filed an appeal and in May 2000, the Court of Appeal held that it was not allowed to rule on the omission to install a water treatment system because this issue was not included in the charge and overturned the conviction.[4]

For all of us involved, including the medical staff, it was emotionally extremely difficult to deal with the death of the patients we all knew very well because of the frequent dialysis sessions. Another frustrating experience was the huge media coverage and the duration of the criminal prosecution that lasted four years. One of the main reasons to find strength emotionally was the fact that all the survivors showed enough confidence in the medical staff to return for treatment in the dialysis centre where they had been intoxicated. In my opinion the following actions may help health care workers who are being prosecuted for the death of patients:

1. Produce a detailed report early in the process in cooperation with legal and medical advisors. These written reports, prepared in advance of the legal procedures, can serve as forms of insurance and reassurance. It can be used as a private document or may be used in court. One should not deviate from the details in that report.
2. Avoid the media, or do a media training. Shortly after the tragedy I was questioned at a local radio station where I said things that did not help my case. I do not regret anything I said, but media training – which I did not do – probably would have improved the way things were said.
3. Avoid finger pointing. Preventable adverse events are often the result of failure of several points of a system and frequently several individuals are involved. System errors may be due to equipment failures or may be the result of inadequate reporting/communication, inadequate training or supervision of doctors/other personnel, inadequate staffing or record-keeping, etc. One should be very hesitant to blame others too openly, as this will probably backfire.
4. Do a thorough literature investigation of the issues involved. In this case I had to read all relevant literature on water production and distribution issues, aluminium intoxications and legal issues. The accused should become an active participant in the preparation of the case, critical to ensuring that his interests are properly protected. At trial he should have more knowledge and valid opinions about the case than the experts. It has an added benefit of reducing the psychological burden of standing helplessly by, while the verdict unfolds. In court one should have a thorough knowledge of all the details in the file. One should also know that the way a lawyer prepares a case may be the exact opposite of the way doctors approach a medical problem. Whereas a doctor looks for facts in order to reach a conclusion, a trial lawyer looks to the desired conclusion to determine what facts he needs to seek.
5. Try to understand the public opinion and the reason why you are being prosecuted. One of the few things an accused can do is to try and understand the litigation process in order to reduce the anxiety that comes from the course of the prosecution and ruling by the judges. The number of criminal prosecutions against physicians has been increasing in several countries.[5-10] This increase in the number of criminal prosecutions may be due to several factors. First, there is a growing concern about medical errors. Doctors, like lawyers and airline pilots, prefer to think of themselves as routinely hyper-careful people whose work habits do not permit error. Unfortunately, physicians are responsible for many accidental deaths[11] and in some cases this overconfidence may be a basis for medical errors in general, and diagnostic errors in particular.[12] Second, it may be costly for a plaintiff to initiate civil court litigation when it is not possible to have a lawyer that works on a no-cure no-pay base.[7] Third, the general opinion may be that medical licensing boards are ineffective in imposing sanctions against physicians for grossly negligent or incompetent behaviour as administrative sanctions against physicians may seem inappropriately related to the seriousness of the outcome. Letting a criminal court draw the line between acceptable medical performance and criminal

negligence may seem to offer advantages (e.g. courts are impartial; public trust could be helped by them holding doctors accountable). In these cases the public expects criminal prosecution to play a major role in assuring medical safety and prosecutors may conclude that criminal charges are the only way to protect the public. Unfortunately, it may be difficult for the criminal legal systems to draw a line between acceptable performance and negligence as prosecutors are not equipped to deal with medical issues. Therefore one should realise that it can take a long time, sometimes more than one year, for the police to only come to the decision whether to indict a physician.[4] In addition, criminal prosecution of practitioners has been shown to have overwhelmingly negative effects for these persons as they can become depressed and sometimes may be unable to work because of the stress.[5,11]

6. Seek psychological help, from professionals, colleagues, family or friends. Even before a doctor has gone to court, consequences of impending prosecutions spread themselves across them and their colleagues. The stress and isolation that practitioners can feel when subject to legal charges or a trial will be an enormous burden and it may be difficult to continue to carry out your jobs normally.
7. Exercise. Jogging has helped me a lot in distracting my mind from the psychological stress. A special goal, like running a marathon, can reduce the negative state you are in.
8. Write a publication of the incident. One may be very reluctant to write about one's (presumed) errors, because of shame or because we want to put it aside when the proceedings are over. However, other persons can make the same mistakes and therefore should be able to learn from similar incidents. Judicial proceedings, nevertheless, can create a climate of fear about sharing information.

For the medical practitioner, prosecution for the death of patients will be one of the most distressing experiences in their medical career, not only because the judicial process may last several years, but primarily because it touches upon the foundation of medical ethics as physicians do not intentionally cause harm. Certainly, prevention, by optimising patient's safety, remains the best way to avoid adverse outcome and criminal prosecution.

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