

## NOCTURNAL HOME HD MONITORED BY LAYMAN CALL-CENTRE

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**Objective:** Currently, we perform on-line monitoring of the dialysis machine in sleeping patients on nocturnal home haemodialysis (NHHD) in a call-centre (ATA Amsterdam). We considered this a necessary safety precaution, and it makes the import of treatment data in our electronic patient file possible. The question is what is really needed to provide a safe treatment and at what costs.

**Methods:** In 2001 Dianet started NHHD in 15 patients. The alarms produced by the dialysis machine were monitored by ATA using the ISDN telephone network. Because of the expenses of ISDN lines we shifted to ADSL networking. This is realised by real-time data transfer from the dialysis machines through a virtual private network by provider KPN-One to the internal network of ATA. The data transfer protocol is developed according to standard NEN 7511 (the European safety protocol for patient data transfer in health care). All ATA centralists can receive an alarm on his/her screen. The alarm follow-up is being organised by ATA, conform protocol, operated by laymen (centralists). The medical and technical treatment data are directly imported into an electronic patient file (Diamant-2) at the Dialysis Centre. A second device, next to the monitoring, is a speak/listen device, which is normally used as alarm-system in regular Home Care. All our patients are equipped with such a device which is considered mandatory by our safety-board.

**Results:** As today a group of 29 patients is dialysing 6 nights weekly. The number of interventions by ATA following machine alarms or Home Care alarms were 99 in 120 patient years. 30 Times a nurse had to be called by ATA to intervene, in 55 cases the patients fixed the problem themselves and 14 times the patient slept through an alarm at the end of treatment and the partner took the "wake-up call". In 2 cases of acute cardiac problems, the system made an adequate guidance of the partner and immediate dispatching of the ambulance service possible. In both cases, however, the patient did not survive. Although ATA infrequently had to intervene, a majority of patients considers on-line monitoring a prerequisite for the treatment. After 4 years of experience, only 6 / 29 well trained patients preferred not to be monitored any more. The costs of the on-line monitoring in 2005 were €82.000 for development, infrastructure, data lines and call-centre; the regular costs of monitoring are €12,00 per treatment .

**Conclusions:** We conclude that the contribution to the safety of on-line monitoring of NHHD is modest. However, it adds to a 'sense of safety' of patients. Currently, we consider on-line monitoring mandatory during the first 6 months of the NHHD treatment or when (temporarily) no partner is present. The costs, however, are high and the system is under discussion now since these costs are not fully reimbursed. This may limit its application. However, the cheap regular homecare speak/listen alarm device operated by laymen in the call-centre has proven its use and will keep its role in NHHD.

**Keywords:** Nocturnal HHD, Hemodialysis, Telemonitoring, cost/benefit