

**[PUB354] Catastrophic Hemorrhage from Venous Needle Dislodgement during Hemodialysis: Continued Risk of Avoidable Death and Progress toward a Solution**

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Dislodgement of the venous needle is a potentially catastrophic complication of hemodialysis. Its risk is magnified by the known failure of contemporary dialysis machines to reliably detect the event. Life-threatening hemorrhage can occur without an audible alarm to alert the staff or patient. While estimates of the frequency vary, we have observed an incidence in our own system of 1 catastrophic hemorrhage per 126,718 treatments, despite protocols to ensure secure placement of the venous needle as well as its constant visibility during the treatment. In our experience of 3 events, there was a 33% mortality. Anecdotal reports previously led us to estimate that 20-40 patients die per year in the US from such events. If there was an annual incidence of hemorrhagic venous needle dislodgements similar to ours, one could estimate 414 episodes annually in the US dialysis population of 350,000 patients. A 10% mortality from such events would produce 41 deaths; a 33% mortality such as we observed would result in 136 deaths. Previous suggestions to prevent such events have included the use of enuresis detection pads. Although no data exist, we have observed failure of enuresis detection devices to respond to volumes of blood up to 250ml. We have previously stressed the need for the development a specifically engineered solution. Recently a blood loss detection device based on infrared sensing has been developed which has the demonstrated ability to detect venous needle dislodgement hemorrhage in the dialysis setting. Such a device may be useful in reducing this persistent cause of avoidable death.

**Publication Only**

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