

**[2007][A1600] Let the Record Show: An Infusion Device Doesn't Record Critical Evidence**

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**Introduction:** Modern infusion devices are frequently equipped with event logs that can track programming and use activity. Although these can be used for billing and use tracking purposes, it is frequently their potential use in supporting accident investigation and patient safety that is the most interesting. Unfortunately, this use is not well validated and the logs' value is purely speculative. We sought to demonstrate mechanisms by which a device log might actually confound an accident investigation.

**Methods:** We analyzed a common, modern infusion device with programming tracking software. We performed a common programming task two different ways, entering data in different orders and using the device calculation software differently each time. We then extracted the event logs to compare the way different programming sequences were recorded. We also performed a simulation of an overdose event in which two failures occurred during programming, one involving patient weight, and one involving the errant "correction" of a correct calculated rate, to see if the device log could demonstrate what "occurred" in our scenario.

**Results:** The log files from the two programming sequences are shown in Figure 1. The log files are identical, and do not demonstrate programming sequence or relevant calculations, features that could be important to a device incident investigation. The simulated over-infusion displayed one programming failure obviously (incorrect patient weight), but failed to account for a secondary failure (failure detection with incorrect recovery sequence).

**Discussion:** Actual simulation and log analysis are important ways to validate and assess programming logs' usefulness in accident investigation. The device log we studied was unable to distinguish key features of programming sequences. It was also unable to document multiple failures in an overdose simulation. We have previously demonstrated how device programming failures are common and a potential source for accidents (1). For these reasons, further device log study and re-design are necessary if these features are to be useful as safety tools.

**References:**

1. Nunnally ME et al, IEEE SMC, 2004; 34: 736-42.
2. JCAHO. Sentinel Event Alert #15.

```
09/27/06 14:46 Line A Program: Stopped
09/27/06 14:46 Line A: Duration: 09:00
09/27/06 14:46 Line A: Rate: 125, VTBI:1000.0
09/27/06 14:46 Line A: Step 1
09/27/06 14:46 Line A: Dose Units: mL/hr, Max D.P.:6.0 PSI
09/27/06 14:46 Line A: Callback: No
09/27/06 14:46 Delivery Started
09/27/06 14:46 Line A: Start mL/hr delivery
09/27/06 14:46 Line A Program: Delivering
```

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09/27/06 14:45 Line A Program: Stopped
09/27/06 14:45 Line A: Duration: 09:00
09/27/06 14:45 Line A: Rate: 125, VTBI:1000.0
09/27/06 14:45 Line A: Step 1
09/27/06 14:45 Line A: Dose Units: mL/hr, Max D.P.:6.0 PSI
09/27/06 14:45 Line A: Callback: No
09/27/06 14:45 Delivery Started
09/27/06 14:45 Line A: Start mL/hr delivery
09/27/06 14:45 Line A Program: Delivering
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**Presentation Time:** 09:00 AM

**Room:** Hall D, Area G

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