

# What kind of evidence can be found in incident reporting systems? Systematic evaluation of incident reports to identify risks using syringe pumps.

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## Background and Objectives

- Incident reporting systems in medicine enable health care professionals to anonymously report patient safety incidents so that others can learn and patient safety can be strengthened.
- The German system www.CIRS-AINS.de is widely established among anaesthesiologists and encompasses 1802 anaesthesia-specific reports.
- The learning opportunities of individual reports can be published not only in case reports and alerts, but also in the context of systematic evaluation.
- The presented method shows a possibility to systematically analyze incident reports. Using the example of syringe pumps, reports were evaluated to show risks of their use.



## Methods

The titles of 1802 incident reports were searched by the word „syringe pump“ (German “Perfusor”). 60 reports were identified. These reports were classified according to the phase of the medication process (A Prescribing, B Documenting, C Dispensing, D Administering, E Monitoring) [1] in which the incident originated.

[1]Hicks RW, Cousins DD, Williams RL. Selected medication-error data from USP's MEDMARX program for 2002. Am J Health Syst Pharm 2004 May 15;61(10):993-1000.

## Results

Within the five phases 13 areas of risk were identified. The areas of risk encompassed one to eleven reports each and exhibited different aspects within the area of risk.

Below phases, identified areas of risk and titles of exemplary reports are shown.

### A. Prescribing

Discontinue medication when indicated (3 reports: e.g. 2808: Syringe pump continues after end of operation)

### B. Transcribing/Documenting

Communication of prescription (4 reports: e.g. 1454: Wrong medication was prepared for syringe pump)

### C. Dispensing

Preparation of syringe for pump (6 reports: e.g. 2027: No medication in syringe pump)

### D. Administering

Programming/ labelling of syringe pump (11 reports: e.g. 2017: Wrong programming of syringe pump)

Connection of lines (7 reports: e.g. 2798: Line of syringe pump connected to cuff)

Lines intact (6 reports: e.g. 1598: Aspiration of air in line of syringe pump)

Power supply of syringe pump (7 reports: e.g. 1940: Syringe pump without battery)

Alarms of syringe pump (4 reports: e.g. 2343: Syringe pump empty without alarm)

Change of syringe (3 reports: e.g. 2484: Syringe pump with catecholamine was replaced too slowly)

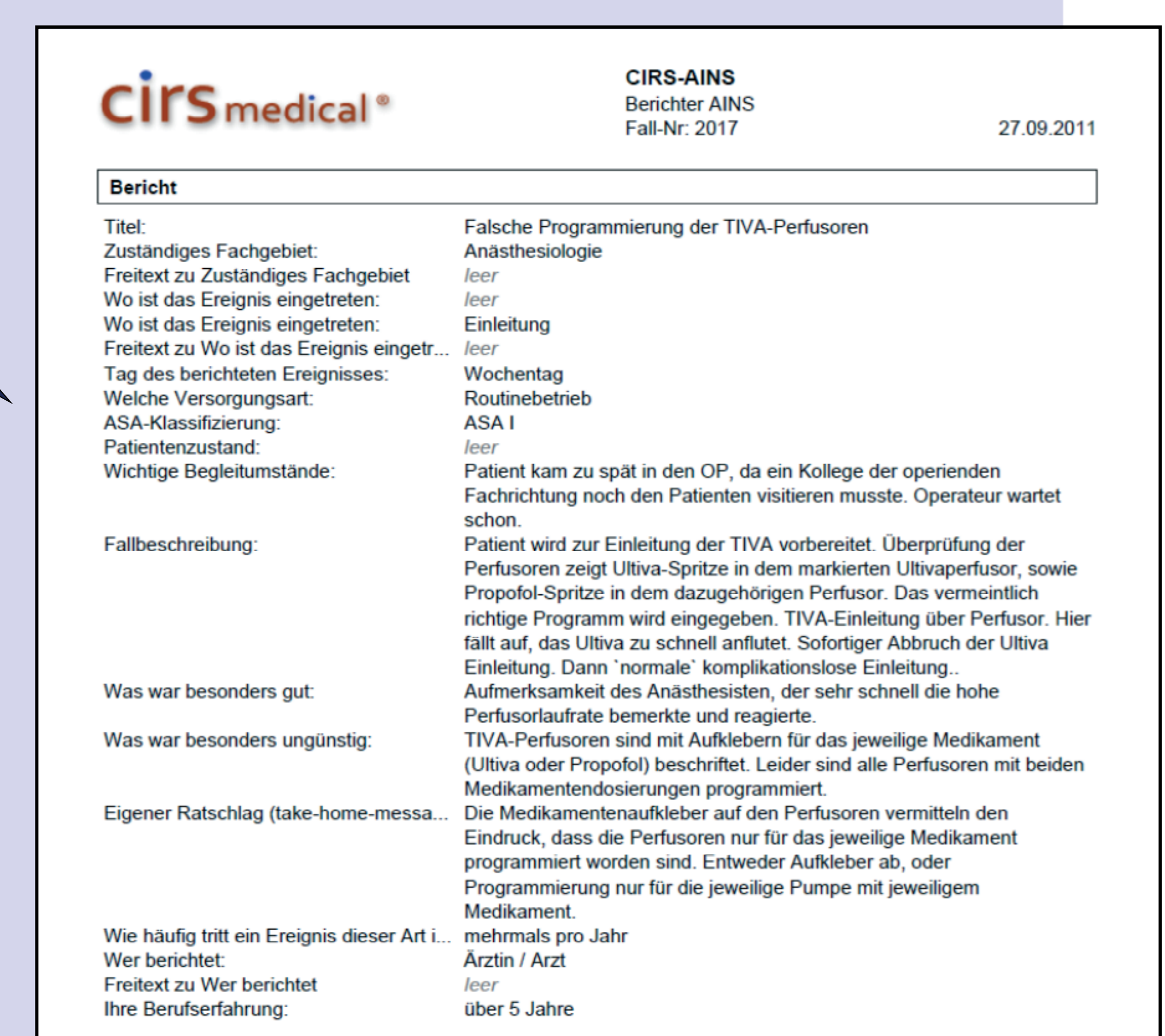
Syringe pump runs correctly (5 reports: e.g. 2125: Bolus was given accidentally)

Syringe pumps and magnetic resonance imaging (2 reports: e.g. 2627: Syringe pump crashes into MRI)

Mounting of syringe pump (1 report: e.g. 2792: Syringe pump falls from mount)

### E. Monitoring

Monitoring of vital signs (1 report: e.g. 13804: Change of syringe pump with catecholamine without monitoring of blood pressure)



## Conclusions

- Reports from incident reporting systems are one possibility to make experiences of individuals available for systematic learning.
- Since not all safety incidents are reported, data is not representative.
- The presented method can help - through summation of individual evidence - to systematically identify areas of risk during the medication process or within other areas of health care.
- The identified areas of risk can be used to develop strategies to diminish risk and strengthen patient safety.

### Possible strategies for reduction of risks associated with the use of syringe pumps:

- User-friendly development of syringe pumps (e.g. programming)
- Changes in packaging and labelling of medication
- Information to manufacturers of products in medicine
- Development of standards for labelling of syringe pumps and iv-lines
- Systematic, process-oriented training of health care professionals