

Abstract

A clinical decision-support (CDS) system (SMARTSTOP) manages infusion-therapy hazards without issuing pump commands. An alert-detection engine (Fig. 1) monitors infusion-pump telemetry and patient data to create a conflict record when a rule-based safety threshold is breached. A notification interface routes the alert to the nearest qualified clinician, whose Acknowledge or Override response is logged as an immutable audit entry while leaving the pump untouched. A conflict-resolution engine then tracks, in real time, (i) infusion-rate status of all implicated pumps and/or (ii) the associated physiological parameter. The record remains ACKNOWLEDGED — UNRESOLVED until objective criteria show that all involved infusions are halted or the risk factor has normalised, whereupon the system automatically marks the conflict RESOLVED (Fig. 2). This layered intent-versus-outcome architecture separates user confirmation from verified risk mitigation, reduces alarm fatigue, preserves existing pump clearances, and supplies a tamper-evident audit trail for regulatory or forensic review (Fig. 3).