Abstract

SmartStop is a dual-mode infusion-safety platform that combines clinician-directed alerts with an optional automated pump interlock. In its primary, non-device CDS embodiment, SmartStop subscribes to critical infusion alarms and EHR events, evaluates them against transparent rule sets, and, using Bluetooth-based proximity mapping, routes real-time notifications to the nearest qualified nurse's smartwatch. The nurse acknowledges on-device; every event, acknowledgement, or escalation is hash-chained into an immutable audit ledger, providing tamper-evident provenance. If no clinician responds within configurable timeouts, the system escalates through additional caregivers while continuing to log actions. In the secondary, 510(k) embodiment, a final escalation trigger instructs the connected infusion pump to pause or stop, serving as a failsafe safety interlock. Both modes are vendor-neutral, deployable over standard hospital networks, and preserve existing pump clearances. The platform therefore shortens alarm-to-action intervals, mitigates alarm fatigue, and, when enabled, autonomously prevents unremediated infusion harm without adding workflow complexity or regulatory burden.