Title: Smart Hospitals as Data Hubs for Next-Generation Pharmacovigilance

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Abstract
Motivation and need: Medication safety remains a major challenge in healthcare, as adverse drug events (ADEs) continue to contribute to preventable harm and hospitalization. Current pharmacovigilance practices rely heavily on retrospective patient record analyses or voluntary reporting, both of which suffer from underreporting and delays. The rapid digitalization of healthcare, together with the development of smart hospitals, creates new opportunities for improving ADE detection and prevention.

Key methods: This work investigates how smart hospitals can serve as data hubs for next-generation pharmacovigilance by integrating multimodal information sources. Specifically, we analyze the combination of the Global Trigger Tool (GTT), sensor technologies, and the Internet of Medical Things (IoMT). The framework links traditional ADE detection with continuous physiological monitoring, automated triggers, and semi-automated reporting systems.

Main results: Results suggest that embedding sensors and IoMT into GTT-based workflows enhances both the sensitivity and timeliness of ADE detection. Governance structures, regulatory compliance (GDPR, EHDS), and human-in-the-loop oversight remain essential to ensure trust, safety, and ethical implementation.

Main conclusions: In conclusion, hospitals are not only sites of care delivery but also critical observatories for drug safety. By fostering collaboration across medicine, biomedical engineering, AI, and regulatory sciences, smart hospitals can become foundational infrastructures for preventive, data-driven pharmacovigilance and safer patient outcomes.