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(57) Abstract :

The present invention discloses an intelligent, AI-integrated blood support system designed for operation theatres to ensure real-time monitoring and automated blood replenishment during surgical procedures. The system comprises a catheter electrode and gauge system for continuous blood parameter assessment, an AI-enabled smart monitor for threshold-based decision-making, a preloaded smart reservoir for automated transfusion, sensor-controlled smart valves for precise delivery, and a user-friendly interface for real-time alerts and control. Upon detecting excessive blood loss, the system initiates automated transfusion, ensuring seamless, aseptic replenishment without air gaps. The invention optimizes intraoperative patient safety, minimizes surgical interruptions, and enhances efficiency with an advanced sterilization mechanism for reuse. The system reduces manual intervention, preventing critical delays and optimizing medical resource utilization.

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