

VITALDB, A Freely Accessible Intraoperative Vital Signs Database of Surgical Patients

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Background/Introduction: Anesthesia information management system (AIMS) has been widely used to improve anesthesia practices and research. However, despite the growing demand for higher-level data for research and engineering, there are limitations in current systems in recording and providing detailed physiologic data.

Methods: We have developed the Vital Recorder, a Windows-based program to record high-resolution, time-synchronized physiologic data from various anesthesia equipment including patient monitors, anesthesia machines, brain monitors, cardiac monitors, and infusion pumps (<https://vitaldb.net>, accessed 29 NOV 2017). The Vital signs DataBase (VitalDB) was built using de-identified case files that were automatically recorded by the Vital Recorder program during daily surgery and anesthesia. Demographic and surgical information of patients and data track information are also provided in the database to enhance research.

Results: Using the Vital Recorder program, we developed the Vital signs DataBase (VitalDB), a single-center database that allows free access to high-resolution multi-device physiologic data recorded from surgical patients during anesthesia (<https://osf.io/xv35a>, accessed 29 NOV 2017). This dataset provides basic characteristics and 561,150 data tracks of 6,423 surgical patients recorded in 10 operating rooms of a tertiary, university hospital. For easy use of the data by medical researchers, we have prepared a summary of patient and surgery information as well as respective case files with a time resolution of 250 Hz.

Conclusion: This database is the first digital register of high-resolution integrated data generated from multiple anesthesia equipment. This dataset will provide valuable information to leading researchers who need high-quality vital signs data that is difficult to obtain from previous AIMSs, as well as to medical researchers and engineers who have difficulty acquiring the vital signs data required for research or development due to various environmental constraints.

