INFOGRAPHICS IN ANESTHESIOLOGY

Complex Information for Anesthesiologists Presented Quickly and Clearly

ANESTHESIOLOGY

Machine Learning for Anesthesiologists: A Primer

Machine Learning:
A data-driven process where a computer learns without manual programming.[1]

Data for Modeling
are divided into two sets: training and testing.

A training algorithm computes the relationships between features and outputs, which are then tested.

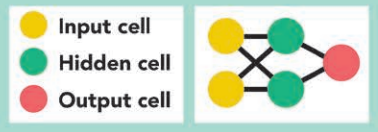
A third, separate data set can be used for validation.

Features & Outputs
are the existing inputs and outcomes used to generate algorithms by machine learning.

Works well with
- Systems with many features
- Complex feature interactions

Neural Networks
are one class of machine-learning approaches.

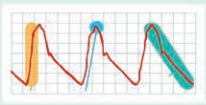
Feed forward neural network



Input features are fed to outputs through hidden layers with weighted connections; weights are adjusted, matching inputs to outputs.

Machine Learning in Anesthesiology

Hypotension[2]



- Public data + local validation data
- Features from waveforms, with more than 3,000 new potential predictors identified
- Better predictions with machine learning

Postinduction Hypotension[3]

- 70% of data used for training, 30% for testing
- Preop and intraop data until induction
- Prediction performance similar to traditional modeling

Postoperative In-hospital Mortality[4]

- 80% of data used for training, 20% for testing
- Preop and intraop data until end of surgery
- Prediction performance similar to traditional modeling

Using machine-learning models to improve anesthesia care is a challenge that remains.

Intraop, intraoperative; preop, preoperative.

Infographic created by Jonathan P. Wanderer, Vanderbilt University Medical Center, and James P. Rathmell, Brigham and Women's Health Care/Harvard Medical School. Illustration by Annemarie Johnson, Vivo Visuals. Address correspondence to Dr. Wanderer: jonathan.p.wanderer@vanderbilt.edu.

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