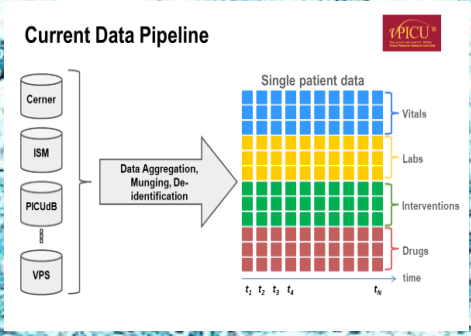
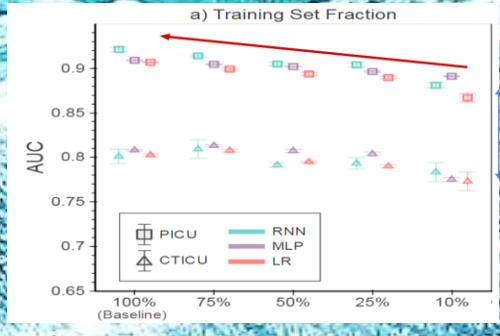
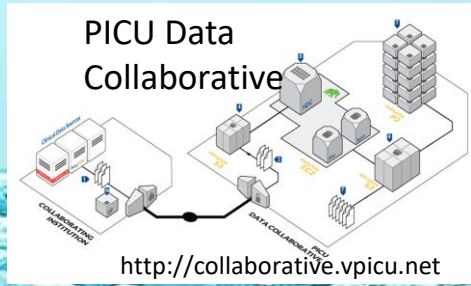


Data Data Everywhere

Why pediatric critical care?



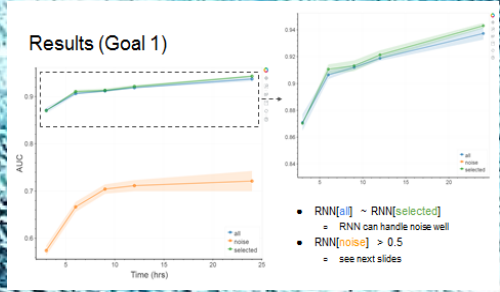
Data as a commodity.
Competition and profit motive
The data yearn to be free!
How can we liberate the data for a better world?
Is health data a public good or a private matter?
HIPAA was kind to us - but out of date.
The GDPR nightmare: The EU general data protection regulations
Synthetic data



Disparate data models
 Irregularly sampled
 sparse: EHR vs monitor data
 non random sampling
 structured and unstructured
 geographically dispersed
 different systems
 Some standards HL7/FIHR
 Data quality relevance

Does data quality matter?

Missingness	Suitability
Noise	Generalizability
Quantity	Reproducibility
GIGO	Feature selection
DoCDat	completeness, validity, accuracy



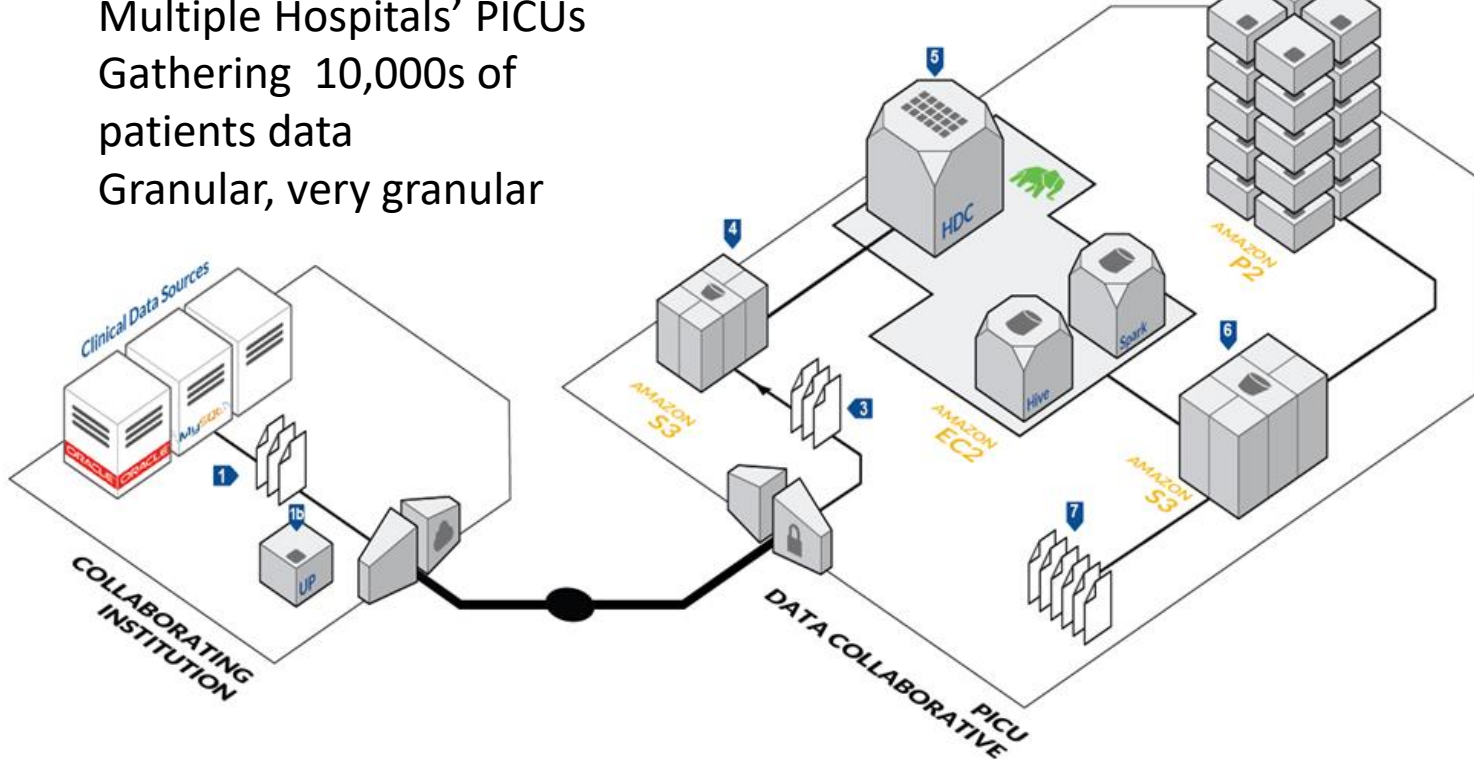
The deep learning approach works by setting up two competing networks: a generator that learns to create realistic records and a discriminator that learns to distinguish between real and fake records. As these two networks are trained together, they learn from their mistakes and the quality of the synthesized data improves. Newer approaches even allow us to further constrain the training of these networks to match specific properties of the input data, and to guarantee a designated level of privacy for patients in the training data.

Synthetic data

PEDIATRIC CRITICAL CARE DATA COLLABORATIVE

DATA ARCHITECTURE

Multiple Hospitals' PICUs
Gathering 10,000s of patients data
Granular, very granular



For more information go to vpicu.net

Dr. Alysia Flynn <aflynn@vpicu.net>

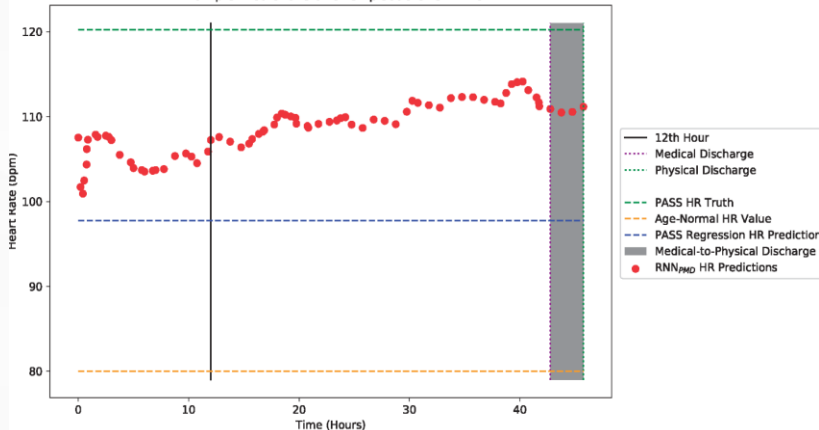
Research and Applications

Predicting individual physiologically acceptable states at discharge from a pediatric intensive care unit

Cameron S Carlin, Long V Ho, David R Ledbetter, Melissa D Aczon, and Randall C Wetzel

Laura P. and Leland K. Whittier Virtual Pediatric Intensive Care Unit, Children's Hospital Los Angeles, Los Angeles, CA, USA

Example Predictions of One Episode Over Time



Conclusion

The concept of PASS encompasses a defined acceptable PICU discharge state. The quantified PASS vital signs acceptable for PICU discharge were compared to published age-normal values and predictions from age-dependent regression and RNN models. The RNN model predictions better approximate patient-specific PASS values than regression and age-normal values.