Research opportunities with AIMS & EHR

Bala G. Nair, PhD
Research Associate Professor
Anesthesiology and Pain Medicine
University of Washington
Electronic Health Record - EHR
Anesthesia Information Management Systems - AIMS

Electronic documentation
- Automatic data capture
- Accurate
- Complete
EHR research advantages

- Data in one place
- More data when compared with paper
- Electronic tools for data extraction and analysis
- Easily scalable

Vs
Challenges

• Data elements not standardized
• Data elements variable over time
• Lack of integration
• Not all data elements are easily “extractable”
• Data latency
• Finite resources
AIMS in our hospitals

HMC
MERGE Healthcare

VA
Dräger

Children’s
CERNER

UWMC
MERGE Healthcare

Northwest
MCKESSON

Valley Medical
Epic
Periop Research Sources

UMWC and HMC data only

AIMS
- Intraoperative

AMALGA (EHR)
- Preoperative
- Postoperative

MPOG (future)
- Intraoperative
- Preop & Postop
- Outcome
**Perioperative data**

**Intraoperative**
- Patient demographics
- Surgical and Case specific data
- Patient Monitor data (every min)
- Ventilator data (every min)
- Bolus and Infusion Meds
- Fluids
- Intraop Labs
- Intraop Events
- Anesthesia care notes
- Anesthesia care personnel
- Audit data

**Preoperative**
- Medical Hx
- Medication Hx
- Allergies
- Preop Labs
- Preop Assessment

**Postoperative**
- Medications
- Labs
- Fluids/Blood products
- PACU/ICU events
- ICD/CPT discharge codes
Age is Positively Associated with Increased Dose of Inhaled Volatile Anesthetics

Van Cleve W, Nair BG, et. al.

Quantification of the Burden of Intraoperative Secondary Insults during Extracranial Surgery in Patients with Traumatic Brain Injury

Khalil S, Sharma D, et. al.

Effect of Chronic Antiplatelet and Anticoagulation Therapy on Emergency Neurosurgery Outcomes: Preliminary Data

Lee A, Rozet I, et. al.
Process

- Faculty sponsor
- Research or Q/A – IRB
- Data dictionary
- Intake of data request
Data request and delivery

**ARD data request and delivery process:**

1. **Complete intake form**
   - Data list
   - Signed Data Use agreement
   - Copy of IRB (if applicable)
   - Honest broker review for AMALGA data

2. **EHDRRC**
   - Review request
   - Approve & Prioritize

3. **Meet with ARD support**
   - Finalize data specifications and list

4. **Scope of work and timeline**
   - ARD Support analyzes scope and timeline
   - Communicates timeline to requester

5. **Delivery of draft data**
   - Draft data delivered to requester

Timeframes:
- 2 weeks
- < 1 week
- < 1 week
- Dependent on request ~3-4 weeks
Data request and delivery

- Draft data delivered to requester

Data verification
- Requester validates data
- Perform data revisions (if needed)
- Finalize data

Delivery of data
- The final dataset is delivered
- Requester acknowledges data receipt

Request closed
Electronic Health Data Request Review Committee (EHDRRC)

EHDRRC and ARD Support members

Chair:
Domino, Karen B., MD, MPH  Professor & Vice Chair (Clinical Research), UWMC

Members:
Nair, Bala G., PhD  Research Associate Professor, UWMC
Newman, Shu-Fang, MS  Research Software Engineer, UWMC
Posner, Karen L., PhD  Research Professor, UWMC
Rooke, G. Alec, MD, PhD  Professor, UWMC
Sharma, Deepak, MBBS, MD, DM  Professor & Chief (Div Neuroanesth & Periop Neurosci), HMC
Van Cleve, Wil, MD  Assistant Professor, UWMC

Electronic Health Data Request Review Committee (EHDRRC):
Nair, Bala G., PhD  Research Associate Professor, UWMC
Newman, Shu-Fang, MS  Research Software Engineer, UWMC
Additional points

• Copies of signed IRB, all modifications & confidentiality agreements

• Data use agreement

• Accounting of disclosures

• Data delivered via IT Services file share

Link: https://depts.washington.edu/apmdev2/research/clinical/ehdr/index.shtml
Other details

• Database programmer (1 FTE)
  - Shu-Fang Newman

• Harmonization of AIMS data elements
  - Intraop – April 2012
  - Preop – Feb 2014

• AIMS data submission to AMALGA
  - July 2012

• MPOG – Multicenter Perioperative Outcomes Group
  - May 2014
Questions?

Thank you!