Multicenter Perioperative Outcomes Group (MPOG)
PCRC Meeting Notes – Friday, October 23, 2015

Ground Rules for PCRC:

1. Each protocol must have specific testable hypothesis with data available in MPOG data structure
2. People requesting specific data elements must also supply that data type to MPOG. If you don't submit that data type currently, then you can't get that type of data type out. However, if you have a co-investigator from another site that does supply that data, then you can ask for that type of data. The reason is so someone on the research team understands the limitations of each data element being requested and used
3. To ensure that there is not a lack of clarity about what the status of the proposal is, each proposal will get the following overall decision at the end of each presentation and discussion
    a. Accept with minimal or no changes required
        i. E-mail revision to PCRC
    b. Accept with moderate changes required
        i. Represent at a future PCRC
        ii. E-mail Revisions to PCRC
    c. Revise and reconsider at future meeting
    d. Reject
4. Meeting will be recorded to be shared later with members of MPOG via the MPOG website. There were no objections to this via the members that were on the call.

Updates

- Shift in data cleaning from how we previously did research (previously used text searching of H&P data elements), but now a shift towards discharge ICD9, professional CPT codes. etc

- **Data Direct Demo**
    - Tool that allows investigators to examine whether a study is feasible based on counts
    - De-identified without IRB; PHI allowed with IRB
    - Effort to build this out on top of MPOG in the next 3-6 months
    - Need the background data to make this a meaningful tool
    - **What can we do to help facilitate capturing of discharge ICD-9 diagnosis or CPT code data readily available?**
        - **Q:** Conversion between ICD-9 and ICD-10
            - **A:** Database already supports both ICD-9 and ICD-10 structures
        - **Q:** Only searching discharge codes?
            - **A:** Currently yes, but still creating structured data/collations (example ASA status).
            - **A:** Capturing both problem list (clinical diagnoses) and discharge codes (billing data)
                - **PRIORITY = DISCHARGE ICD-9 CODES (for risk adjustment and outcomes)**

- **Q:** Does this sit locally or centrally?
    - **A:** Resides at MPOG Central, but can filter by institution – you can either look at ALL of MPOG or your own institution
- **Q:** How many sites are contributing ICD-9 codes?
    - **A:** Currently 9
- **Q:** Questionable quality/selection bias for ICD-9 diagnoses codes?
    - **A:** Body of literature showing the bias, but we need the discharge ICD-9 codes to help answer unknowns in the field.

Proposal

Variation in management of neuromuscular blocking agents, monitoring, reversal and the risk of pulmonary complications after major surgery

Tim Dubovoy MD, Nirav Shah MD, Shelley Housey MPH, Amy Shanks PhD, Mike Aziz MD, Sachin Kheterpal MD, MBA, Other MPOG interested investigators

Comments

Q: Do we include/exclude outpatient cases?

Q: Statistical Analysis Plan

- 1-2% complication rate, so enough power to include all other covariates
- How to hold one exposure variable constant, while assessing the other ones? **Planned Subgroup Analyses**

Q: Have we considered other models looking at optimal timing, such as "Broken stick models"/"change point" modeling?

A: (SK) Could use this analysis plan for the neostigmine 0 group to determine optimal timing if after last NMB

Q: **(Dr. Pace)** How do we define "optimal" for each exposure?

A: (SK) Reference variable identifies one definition of optimal per exposure group. Does the risk change across categories when compared to reference group.

A: (Dr. Pace) Not dependent on reference point – reference should be chosen at one extreme or the other. Still need to define optimal. "Look at the association" between these categories and then guideline experts can use this data to determine optimal cutoffs.

A: (SK) More of a descriptive paper indicating what we see in practice but not able to determine "optimal"

Q: Culture based on environment? Interaction terms with center-effects and exposures. Nesting of the effects? Need provider-level effects too.

A: (SK) Planned on a fixed effect model, but could do mixed model with center as random effect? Use clinical effects as fixed effects and then center effect as random effect.

Q: (Dr. Aziz) What is the hypothesis? There is some optimal dose/timing/etc of reversal?

A: (SK) Hypothesis – is there variation in use? Does that variation, in these three exposure variables, does it have a relationship to outcomes?

Q: (Dr. Schonenberg) Variable for one-lung vent? Include as a subgroup analysis?

A: (SK) Need to add it in, but already have collation.

Q: (Dr. Pace) Simplify analysis my creating propensity score for all those covariates.

A: (SK) Confounder variables with dependent variable of outcome or dependent variable as exposure variable?

A: (Dr. Pace) Focus on one exposure to create propensity score.

A: (SK) Need input on how to manage the confounders.

Q: Should you use surgical level CPTs?

A: (SK) Most centers are NOT providing surgical CPT. We could use anesthesia CPT codes.

Q: How incomplete is the dataset? And what is the plan?

A: (SK) Missingness plan will depend on the variable. Most of the confounder variables should have less than 10% missing rate. Consider imputation of confounder variables.

A: (Unknown) Impute anything other than outcome variable

Q: Data mining exercise – "random forest" gives you an idea of how the data is structured and can help inform the next study.

Q: Are we capturing timing of dosage of NMB?

A: (SK) Think we are capturing that using the ED95 conversion per unit time.

Q: How many take TOF after reversal?

A: (SK) Did not include TOF between reversal or extubation and post-extubation because not quality/accurate time stamps.

A: (SK) Is there a culture around taking a TOF after post-reversal? Probably not documented well even if taken. We could include this as one of our **QI efforts**.

Q: (SK) Should we wait for NSQIP data for this paper? Separate paper?

A: NSQIP will have time-stamps for all the outcomes – better quality outcome data compared to discharge ICD-9 codes.

A: (SK) Complete this analysis as planned – exploratory. And then use this analysis to complete the NSQIP analysis.

A: (SK) We shouldn't wait on NSQIP data, but we will do both analyses and write-up both papers.

Q: (SK) Subgroup or exclude BMI>60, etc

A: Look at percentage of missing BMI and potentially impute.

Q: (SK) Exclude renal/liver/etc cases.

A: Could do a sensitivity analysis with renal disease (ICD-9 code). SK agrees with this.

Q: Is a center going to be excluded if we can't get preop medications?

A: (SK) No, because only a small number of patients would be on pyridostigmine chronically.

Q: What about doses of neostigmine after extubation?

A: (SK) Is this an exposure/confounder/etc? Already have the NMBs separated out as covariates.

A: (SK) One option to add post-extubation neostigmine as an additional outcome. Creating a more complex outcome that includes both ICD-9 discharge and clinical aspects. (Sensitivity analysis)

Institution	**Vote**
Academic Medical Center (AMC) Amsterdam	**Not Present**
Cleveland Clinic	**Electronic**
Columbia	**N/A**
Mercy Health System	**Not Present**
New York University	**Electronic**
Oregon Health Science University	**Electronic**
University Medical Center of Utrecht	**Electronic**
University of Colorado	**Electronic**
University of Florida	**N/A**
University of Michigan	**Abstain**
University of Pennsylvania	**Electronic**

University of Oklahoma	**Electronic**
University of Tennessee	**Electronic**
University of Utah	**Represent**
University of Vermont	**Electronic**
University of Virginia	**Electronic**
University of Washington	**Electronic**
Vanderbilt	**N/A**
Washington University , St. Louis	**Electronic**
Weill-Cornell Medical Center – New York Presbyterian	**Electronic**
Yale	**Accept**

Final Decision: Electronic Revision