NCIC Clinical Trials Group New Investigator Clinical Trials Course

Workshop 6 /11

Secondary Analyses and Mining of Clinical Trials Databases

Disclosures

- **No Disclosures**

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Learning Objectives

- To understand the potential benefits of utilizing clinical trial databases for additional analyses
- To understand the potential disadvantages and feasibility challenges of retropsective database analyses

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Background

- Clinical trials collect data from all participants in a pre-planned homogeneous way to form the clinical trial database
- This database is designed to address a clinical trial question, but the database is a lasting resource which can be used to address multiple other research questions

Examples of Secondary Database Analyses

- May be pre-specified in clinical trial protocol
  - QoL
  - Economics
  - Correlatives (Biomaker)
- Unrelated to original trial protocol
  - Correlatives using tissue samples
  - Trial methodology and statistical methodology
  - Outcomes of specific cohorts of patients (e.g. elderly)
  - Toxicity
  - Drug interactions

Advantage of Clinical Trial Database vs. Chart Review

- **Clinical Trial Database**
  - Data collected in a pre-specified homogeneous manner (case report forms)
  - Patient population relatively homogenous (e.g. disease, stage, prior treatments etc)
  - Includes data on multiple prognostic factors needed for multivariate analyses (e.g. performance status)
  - Data reviewed
    - Checked for completeness and consistency
    - Monitored for accuracy (some trials 100% source verified)

Advantage of Clinical Trial Database vs. Chart Review continued

- Retrospective chart review
  - Data not homogenously reported
  - “data” missing (e.g. performance status; toxicity)
  - “data” not checked, verified

Benefits of clinical trial database analyses

- Address unique research questions that could be difficult or impossible to address without a clinical trial database
- Advantage for trainees/ new investigators
  - May yield high impact journal articles
  - Attract awards for trainees
    - ASCO Merit
    - NOYCIA

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Considerations for a successful database research project

- **Research question**
  - Database analyses are work intensive, research questions should be high quality
- **Feasibility**
  - Was data / tumour sample required to address the question collected?
  - Are there sufficient patient numbers, tumour samples to address the question (Central office may need to undertake preliminary feasibility assessment)
  - Ethics, grant funding, resource may be required

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Examples of Database Analyses

- Influence of Sex on toxicity and outcome of treatment in small-cell lung cancer (Singh et al., JCO, 2003)
- Risk of acute leukemia following epirubicin-based adjuvant chemotherapy (Crump et al., JCO, 2003)
- Enrollment of older patients in cancer treatment trials (Yee et al., JCO, 2003)
- Anemia on outcome of chemoradiation for limited small-cell lung cancer (Laurie et al., Ann Oncol, 2007)
- Age and comorbidity as independent prognostic factors in the treatment of metastatic NSCLC (Asmis et al., JCO, 2008)
- Economic analysis of adjuvant chemotherapy in operable NSCLC (Ng et al. JCO 2007)
- Economic analysis of erlotinib in advanced NSCLC (Bradbury et al., JNCI, 2010)

Database examples continued

- Tumor cavitation: impact on objective response evaluation in trials of angiogenesis inhibitors in non-small-cell lung cancer (Crab et al., JCO 2009)
- Alternate endpoints for screening phase II studies (Dhani et al., CCR 2009)
- Venous thromboembolism and non small cell lung cancer (Hicks et al., Cancer 2009)
- Anticoagulation and bleeding (Le Maître et al., JTO 2009)

Next steps…

Homework

- Has the research question already been addressed?
- Does a suitable clinical trial database/ tumour samples exist?

Liaise with NCIC CTG Central Office

- To access tumour samples follow procedure on tumour bank website
- Other database analyses: Contact PC of trial early to discuss logistics, funding,
- Prepare LOI

Collaboration

- NCIC CTG database analyses are a collaboration
  - Trial databases will not leave central office
  - Statistical analyses conducted by central office statisticians
  - Abstracts and manuscripts must be reviewed by central office before being submitted

Useful links

- NCIC CTG Tumour Bank Website
  - http://www.ctg.queensu.ca/TissueBank/index.html
- List of NCIC CTG clinical trials
  - http://www.ctg.queensu.ca/public/Clinical_Trials/clinical_trials.html
- Central Office Faculty
  - http://www.ctg.queensu.ca/public/about/bios.html

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