



# CAPHC-CPDSN

## Special Projects: ALOS Variation

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# Rationale for Special Projects

- Key activity of the CAPHC-CPDSN program
- Facilitate new opportunities for collaboration and benchmarking at local, regional and/or national levels
- Means for enhancing capacity by supporting “sub-specialties” within our Paediatric Community of Practice



# Our Goals ...

- Enhanced data quality & reliability
- Standardization & best practice
- Improved patient outcomes
- Operational & cost efficiencies



# A Special Project should ...



- Generate national interest
- Have potential for national impact
- Demonstrate “Value–Added” for all members



# 2007 Special Project: ALOS Variation

- Derived from 2004/05 Annual Report
  - Suggestion to review variability in ALOS for Top 20 CMGs or Top 20 MRDX within Paediatric-Medical, Paediatric-Surgical & Paediatric-Mental Health
- Initial concept TOO broad ... focus narrowed
  - ALOS for “Typical” Cases
    - Exclude deaths, sign-outs, transfers & outliers
  - Paediatric-Medical subset
  - Top 10 MRDX

# 2007 Special Project: ALOS Variation

- Statistician contracted to further narrow the project focus
  - Additional LOS and utilization data extracted from CIHI Portal to facilitate preliminary statistical analysis
  - Statistical methodologies applied to determine which Top 20 MRDX had greatest statistical LOS variation between centres

# 2007 Special Project: Statistical Methods

- **“I-SQUARED” Statistic**

- Statistical test of heterogeneity between studies (or hospitals)
- Used in Cochrane Reviews
- Percentage that represents how much greater the observed variation between hospitals (or studies) is than what would be expected by chance
- Values of greater than 50% denote SUBSTANTIAL variation
- Derived from ALOS and Standard Deviation LOS data associated with the Top 20 MRDX for EACH centre

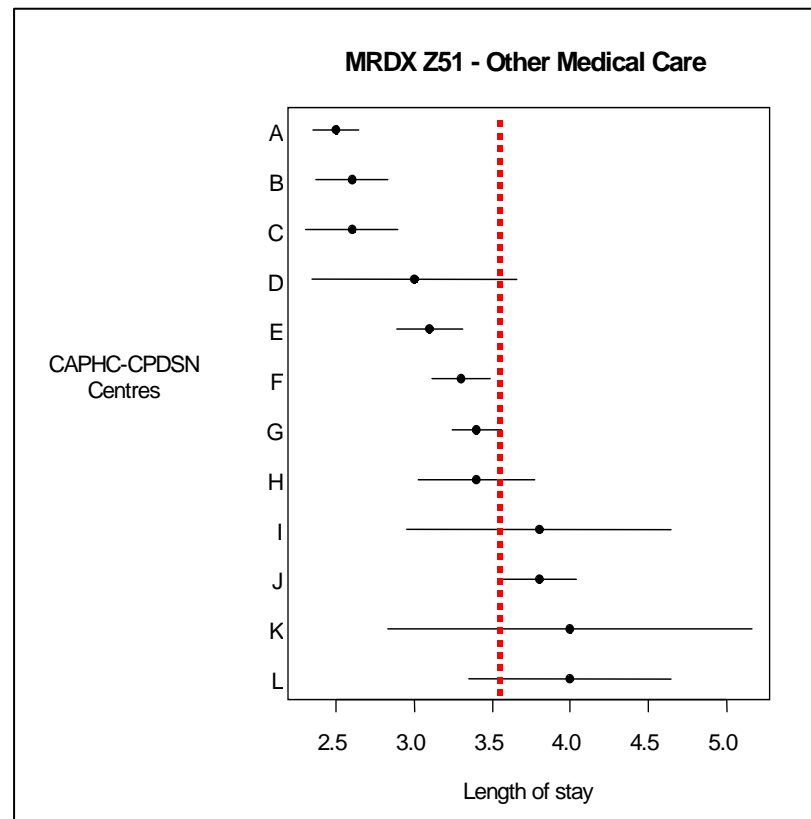
**References:**

Higgins JP, Thompson SG. Quantifying heterogeneity in a meta-analysis. *Stat Med* 2002 Jun 15;21(11):1539-58.

Higgins JP, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. *BMJ* 2003 Sep 6;327(7414):557-60.

# 2007 Special Project: Statistical Methods

- **FOREST PLOTS**
  - show each centre's ALOS together with confidence intervals
  - Black Dots = ALOS
  - Horizontal Lines = 95% Confidence Intervals
- **Vertical Line Test**
  - If there were very little difference between each centre's ALOS, a drawn vertical line would intersect each centre's confidence interval



# 2007 Special Project: ALOS Variation

- Initial statistical results prompted further focus
  - “Core clusters” identified within each MRDX by reviewing associated CMGs and Complexity levels
  - MRDX and “core” CMGs matched in all cases
    - MRDX J45 – Asthma with CMG 146 – Asthma
  - No Complexity associated with all “core” CMGs
    - Plx Level = 1
  - New I-Squared values & forest plots based on refined data



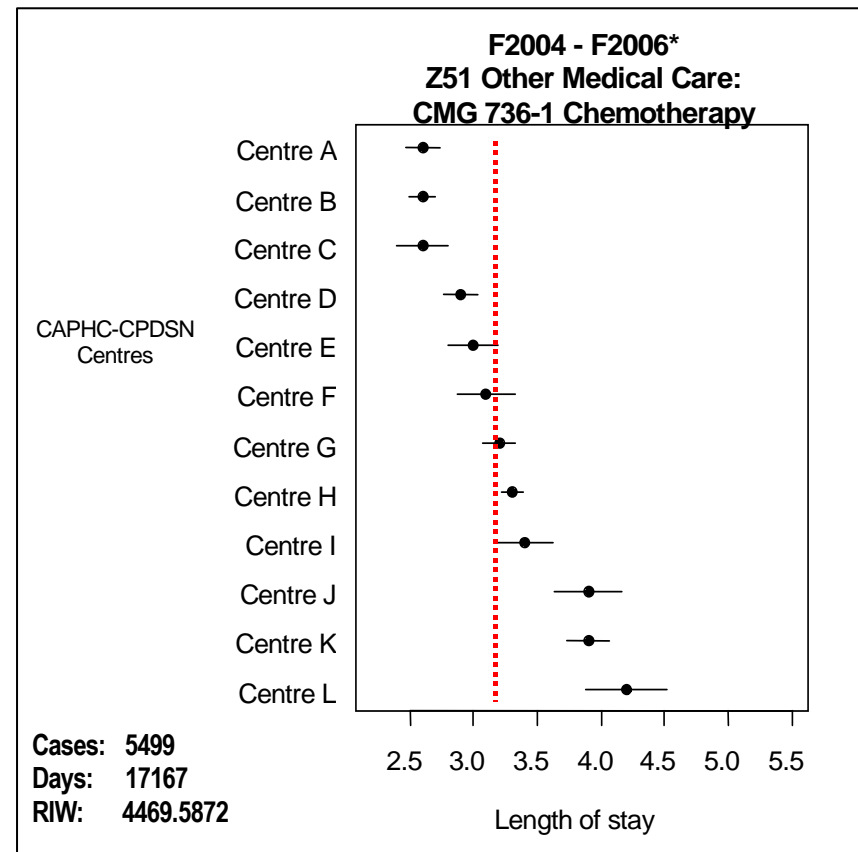
# 2007 Special Project: ALOS Variation

- Additional utilization data factored in
  - New I-Squared values and forest plots clearly demonstrated areas with the “greatest” statistical variation in LOS
  - Final selection for project focus based on statistical variation AND associated:
    - Patient separations (i.e. Total Cases)
    - Patient days (i.e. Total Patient Days)
    - Resource use (i.e. Total RIW)

# 2007 Special Project:

## Focus 1: Chemotherapy

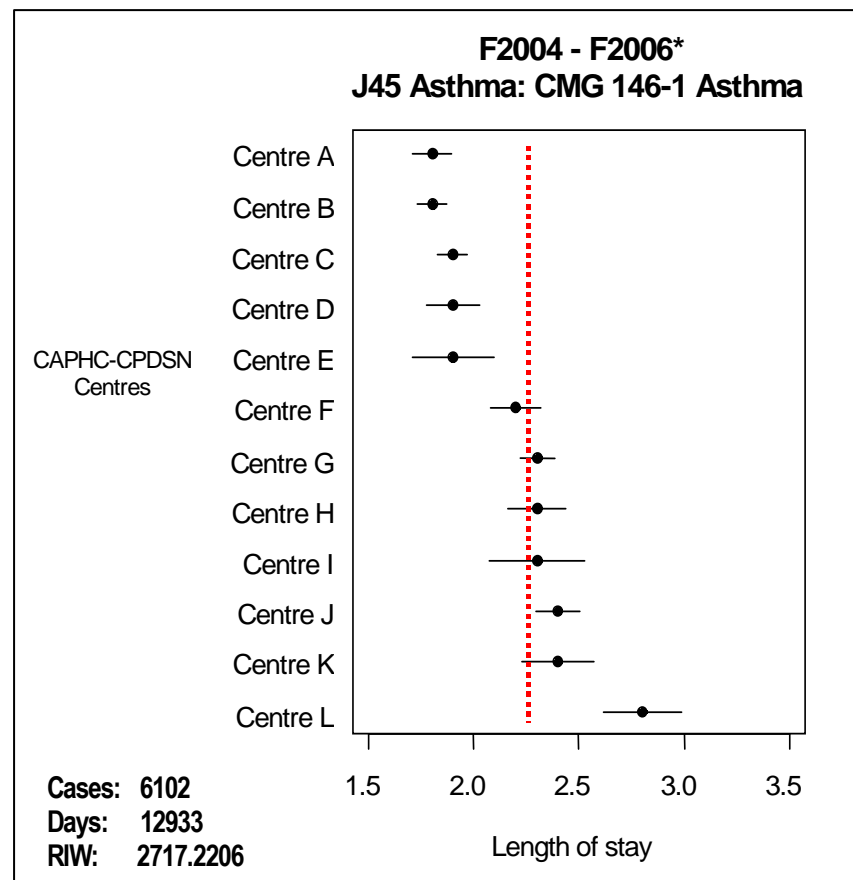
- MRDX Z51 – Other Medical Care: CMG 736-1 Chemotherapy
  - Highest ALOS variance (I-Squared Value = 94)
  - Highest volume of cases
  - Highest number of patient days
  - Highest resources consumed
  - Medical, but “intervention driven”



# 2007 Special Project:

## Focus 2: Asthma

- MRDX J45 – Asthma:  
CMG 146-1 Asthma
  - Common everywhere in Canada
  - 2<sup>nd</sup> highest volume of cases
  - 3<sup>rd</sup> highest number of patient days
  - 3<sup>rd</sup> highest resources consumed
  - 5<sup>th</sup> highest ALOS variance (I-Squared value = 89)
  - ALOS variation more likely due to management protocols than to variation in disease



# Next Steps ...

- **Expanded time frame**
  - Initially based on data from F2004
  - Now based on data from F2004 – F2006
- **Inclusion of Quebec data**
  - Differences in coding classifications and grouping methodologies
  - Request of equivalent LOS data:
    - MRDX 493 – Asthma / V58 – Other Medical Care (ICD9)
    - DRG 96 – Bronchitis & Asthma / 410 – Chemotherapy
    - Severity of Illness = Mild

# Next Steps ...

- **Examine data quality**
  - Can ALOS variation be explained by issues with:
    - Coding?
    - Documentation?
  - Detailed, record-level de-identified data will be requested from each site
    - All associated diagnoses, interventions, types of service providers, specific demographic info (i.e. age, gender) and actual LOS
    - Review of data to look for trends and / or **red flags** in coding practices
    - Potential audit of “flagged” records at each centre



# Next Steps ...

- **Examine Clinical Processes**
  - Identifying opportunities for improvement
    - Best clinical practices?
    - Standard protocols for care delivery?
  - Establishment of a clinical working group to
    - Ask the key questions
    - Share best practices and protocols
    - Determine potential improvements at each centre



# Potential Outcomes

- Improved data quality and standardization of coding and documentation practices
- Identification and sharing of national best practices and best processes of care for chemotherapy and asthma patients
- Knowledge transfer and sharing of CAPHC-CPDSN expertise with ALL facilities that provide paediatric care in Canada



**Thank you!**