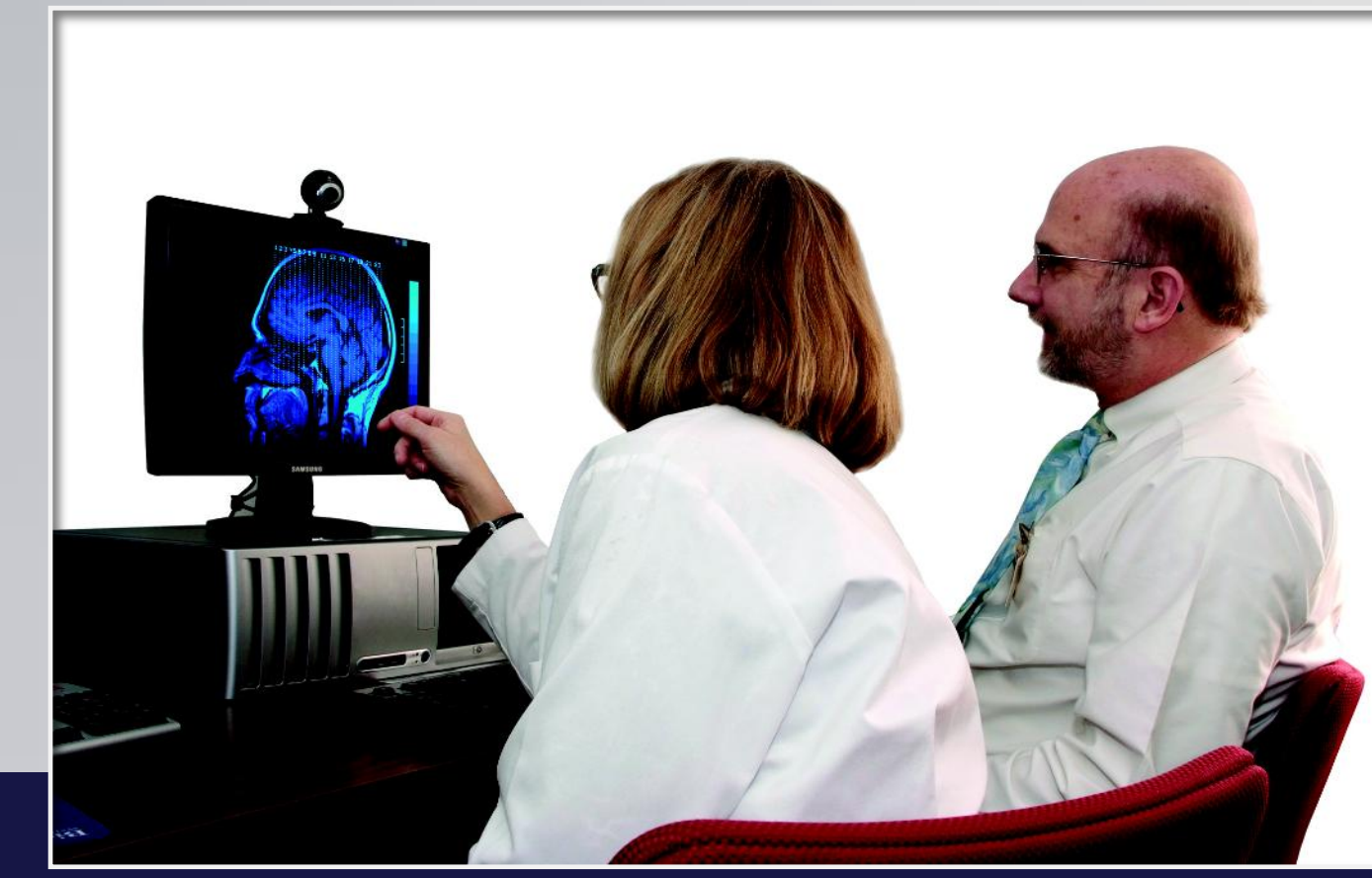


Stroke Care in Maine: Analysis of All-Payer Claims Data to Measure Stroke Quality of Care

Louder D^{1*}, Stein R², Keith R³, Zanichkowsky R⁴

1 Maine CDC/DHHS Cardiovascular Health Program, Augusta, ME; 2 Penobscot Bay Medical Center, Rockport, ME; 3 University of Southern Maine, Portland, ME; 4 American Stroke Association – Founder Affiliate, Scarborough, ME



Background

Since its inception in late 2007, the *Stroke Care in Maine* workgroup has focused on developing a strong system of care for Maine stroke patients and providers, including public outreach, pre-hospital, acute and sub-acute diagnosis and treatment, rehabilitation, and continuous quality improvement. Recognizing that data collection and analyses would be a vital component to the development of ongoing efforts, the workgroup prioritized identification of viable sources for state-wide stroke data, to assist with establishing a baseline, improving quality and outcomes, and informing future stroke systems planning.

However, few of Maine's 36 acute care hospitals currently collect and/or report such data, either as Joint Commission Primary Stroke Centers (there are currently three), or as GWTG-Stroke hospitals (there are currently seven, three of which are also Primary Stroke Centers). In January of 2009, the workgroup began to discuss the feasibility of utilizing Maine's All-Payer Claims database as a source to measure stroke care and outcomes throughout the state.



Project Objectives

The Stroke Care in Maine Workgroup conducted an analysis to:

- Assess the feasibility of using medical claims data to measure quality of care for individuals hospitalized for stroke
- Utilize the data to establish state-wide baselines for quality metrics specific to stroke diagnosis and treatment, identify gaps in care, and plan future efforts

The primary focus was on classifying inpatient hospital stays by diagnosis categories and attempting to create and analyze claim-based quality measures for treatment of stroke similar to those defined by the Joint Commission's Primary Stroke Center Certification program.

Data/Methods

The Maine Health Data Organization provided data on medical and pharmacy claims paid by private insurers and Medicare (Medicaid data was not yet available) for years 2003-2006 for persons with cerebrovascular diagnoses (ICD-9 430-436). Files included data on individuals covered, such as gender, age, zip code of residence, insurance payer, type and coverage level. Medical claims included data on diagnoses, providers, dates and types of medical services, tests and procedures received.

An analytic file of inpatient stays was constructed (n=12,202). Specific metrics for the analysis included: use of EMS, use of diagnostic scans, use of thrombolytics, neurologist visits, endarterectomy or stent insertion, length of stay, discharge medications, survival and mortality.

Frequencies were calculated and compared to identify any significant variation among metrics by diagnosis, year, age, gender, and/or location. We calculated confidence intervals for the proportions in the frequency tables and chi-square p-values for 2x2 crosstabs, and for the continuous variables (length of stay, days before death) we also provided confidence intervals.

To further assess the accuracy and utility of the All-Claims data in guiding stroke systems work, mini-analyses were conducted with two hospitals, comparing a select group of metrics from their individual claims data with equivalent metrics from their "Get With the Guidelines-Stroke" databases.

Limitations of the data:

- Claims data includes less detailed and precise information than the medical record
- Medicaid data was not available at time of this analysis
- Death is only recorded for those who died in the hospital
- Pharmacy data include only commercial payers, and only for prescription meds
- Imaging data may be limited by submission of third-party billing for diagnostic tests

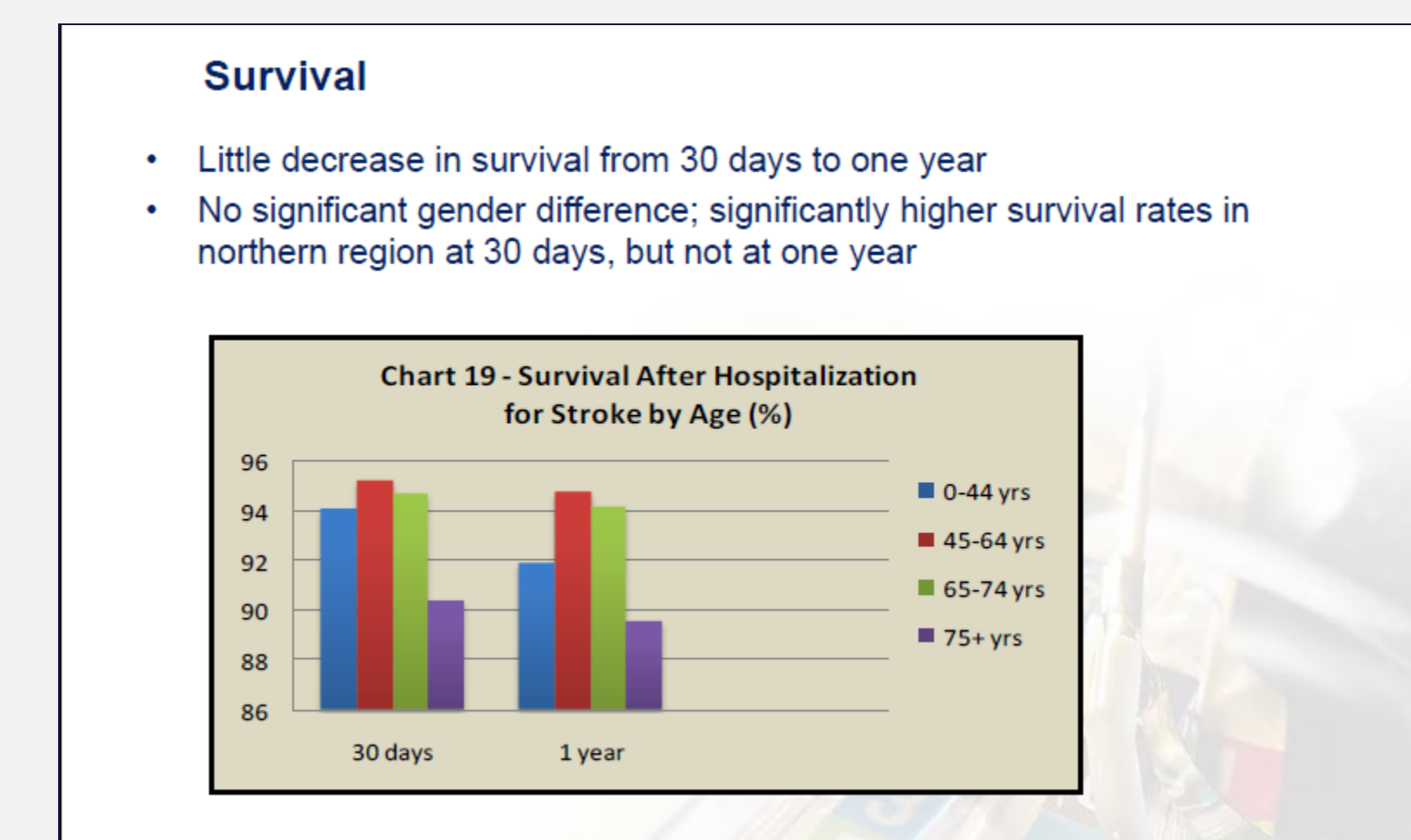
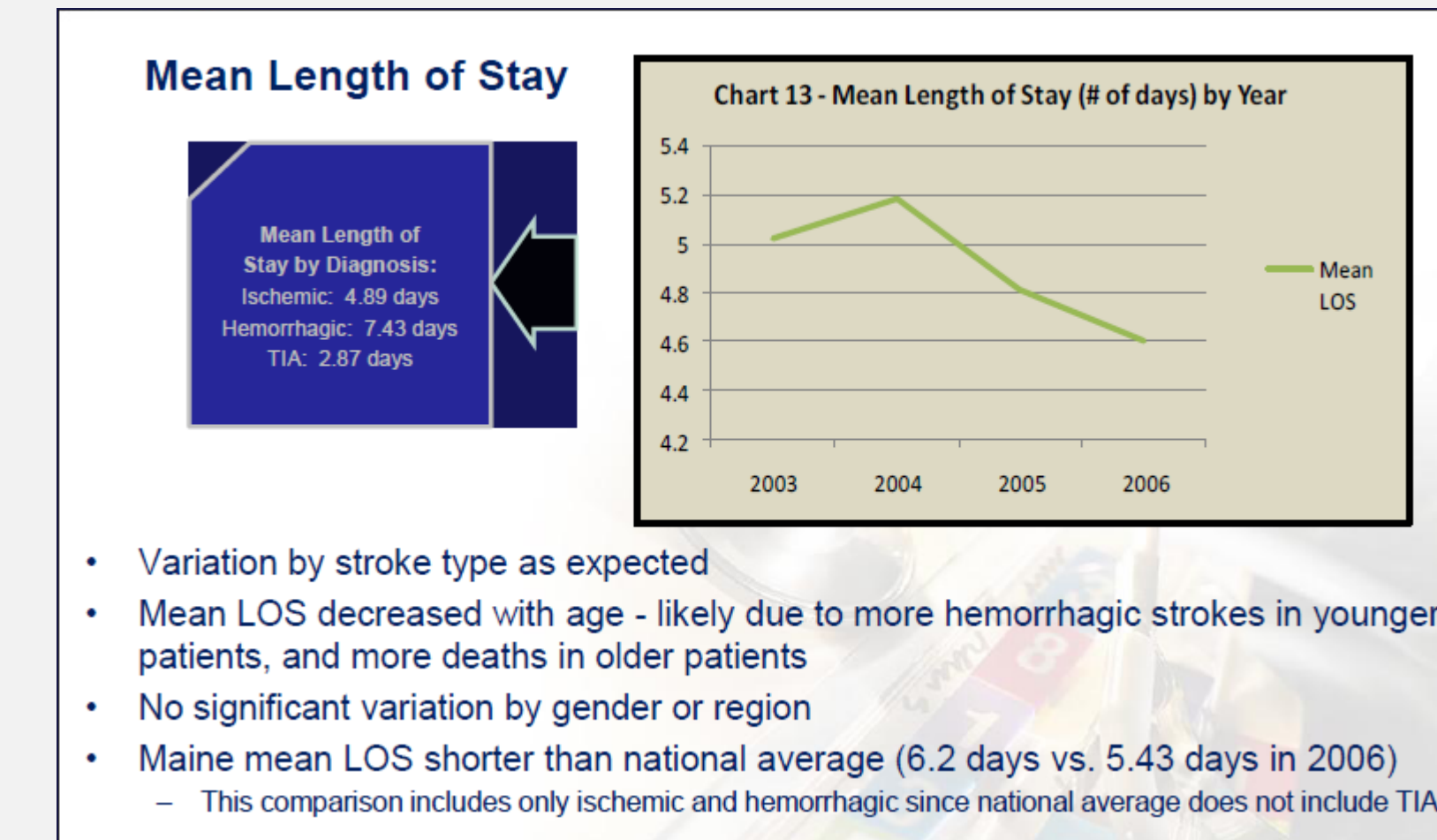
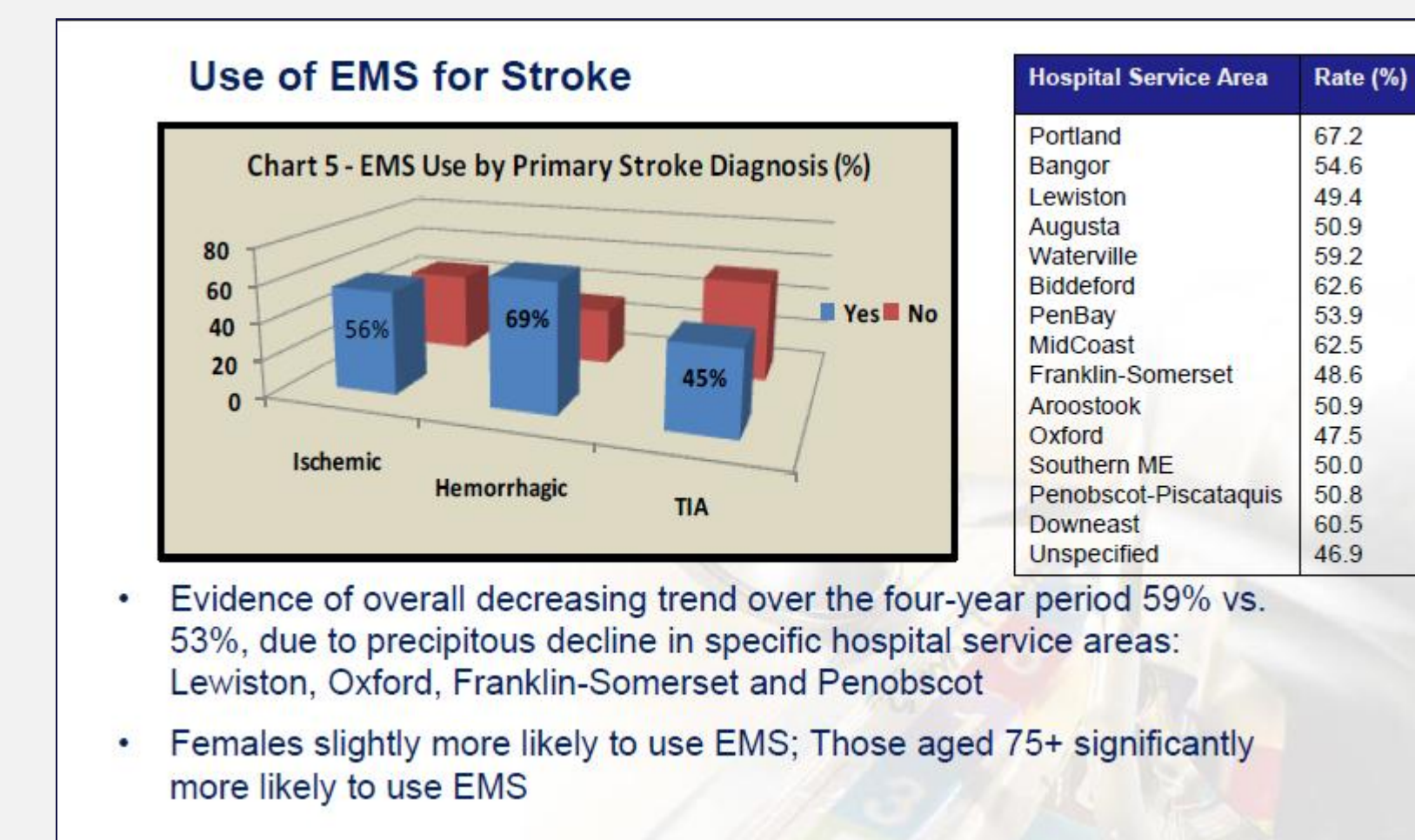
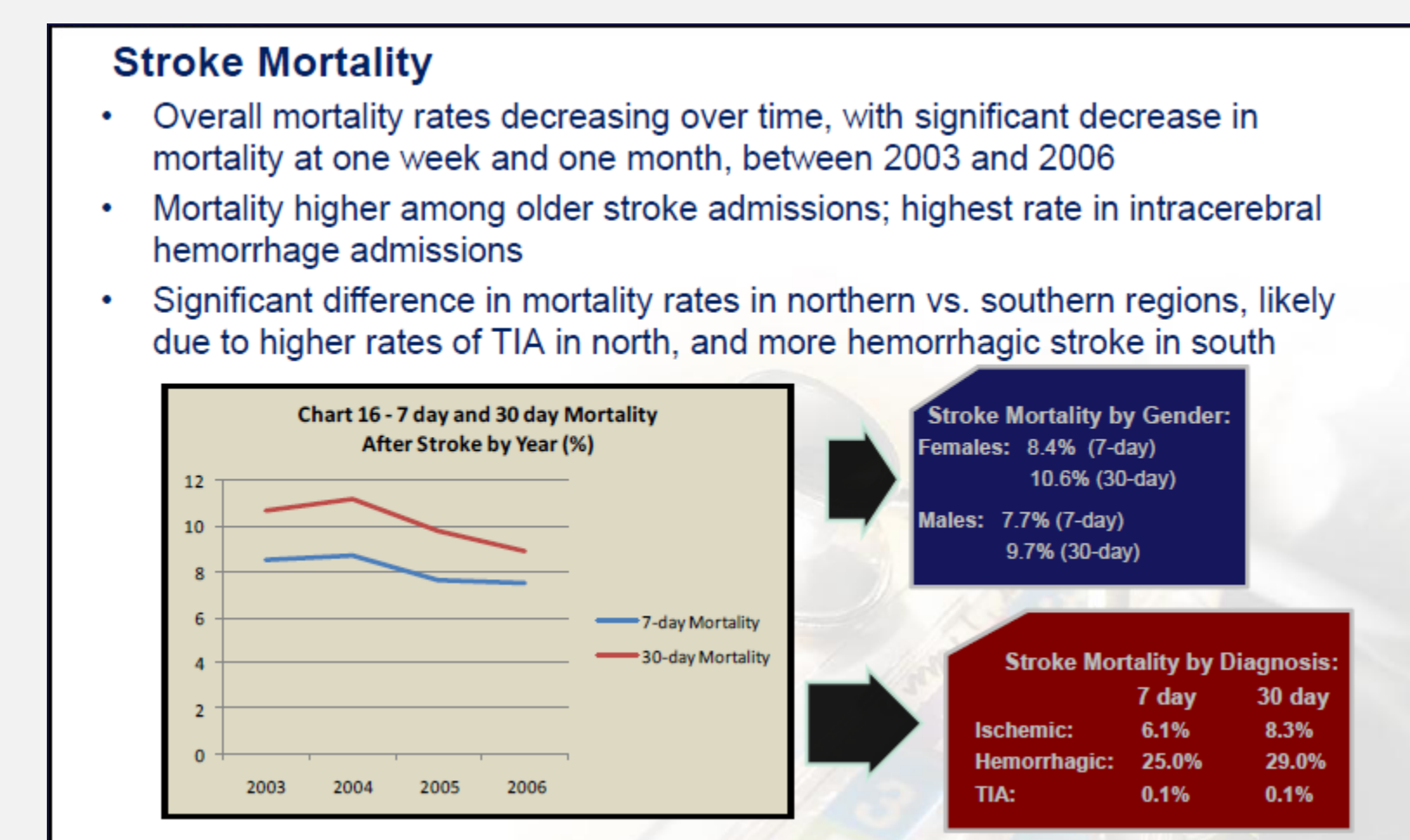
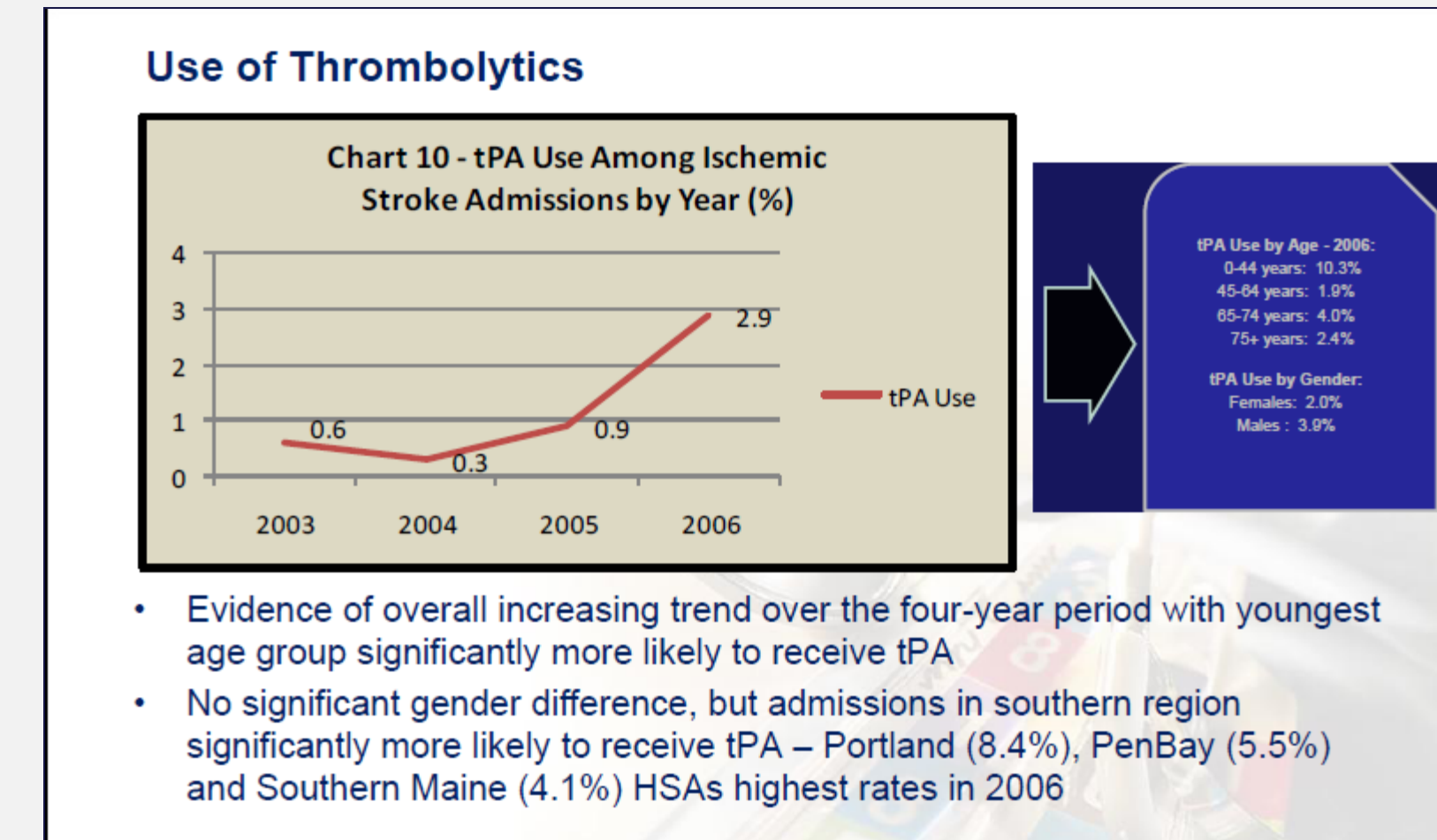
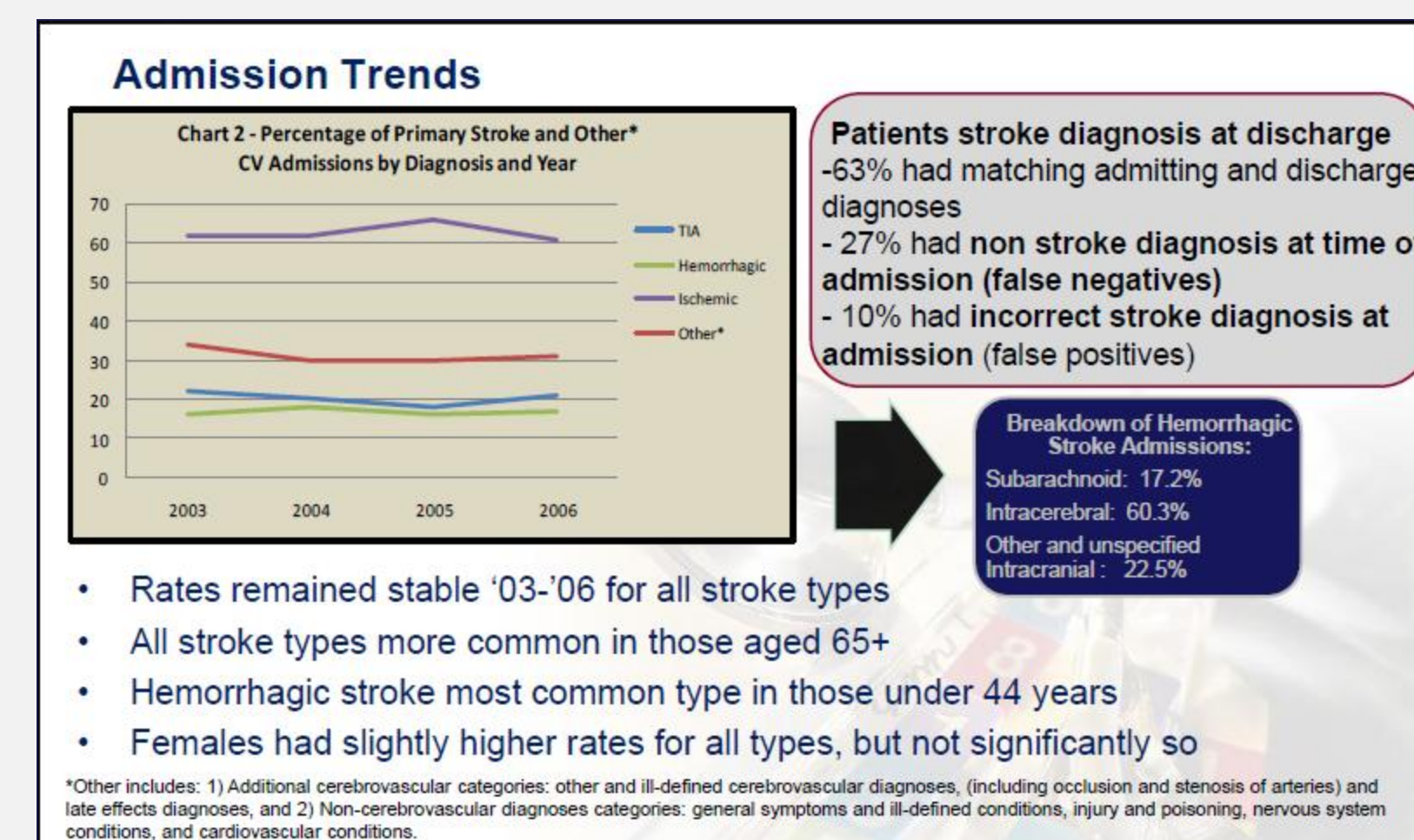
Data Sources:

1. Maine All-Claims Database; Data compiled by Maine Health Data Organization (ICD-9: 430, 431, 432.0, 432.1, 432.9, 433.01, 433.11, 433.21, 433.31, 433.81, 433.91, 434.01, 434.11, 434.91, 435, 436, and ICD-9 procedure and revenue codes: 35.1, 87.03, 61.1, 88.91, 73.x, 89.5-89.54, 99.10, 38.12, 00.55, 39.90, 0005T, 0006T, 0007T, 0075T, 0076T, 37215, 37216)
2. Penobscot Bay Medical Center GWTG-Stroke Patient Database; 2006-2007
3. Eastern Maine Medical Center GWTG-Stroke Patient Database; 2007
4. American Stroke Association: GWTG-Stroke Regional Database; 2006

Analysis Results

Several of the claims metrics showed results comparable to national statistics and close to metrics calculated using GTWG data from mini-analysis hospitals. These included:

- Distributions of stroke diagnoses: For example, PenBay claims data vs. PenBay GWTG data - ischemic - 60% vs. 66%; hemorrhagic - 11% vs. 7%; and TIA - 29% vs. 28% respectively;
- Rates of EMS use: For example, 53.9% of PenBay stroke admissions had a corresponding EMS claim vs. 54% in PenBay's GWTG-Stroke database;
- Thrombolytic use: 2.9% in Maine, identical to the rate among all NECC region GWTG-Stroke hospitals;
- Length of stay: 5.3 days among PenBay GWTG-Stroke patients vs. 5.21 days in the hospital service area;
- Mortality: 7.2% mortality among stroke admissions at Eastern Maine Medical Center vs. 6.6% mortality among EMMC GWTG-Stroke patients



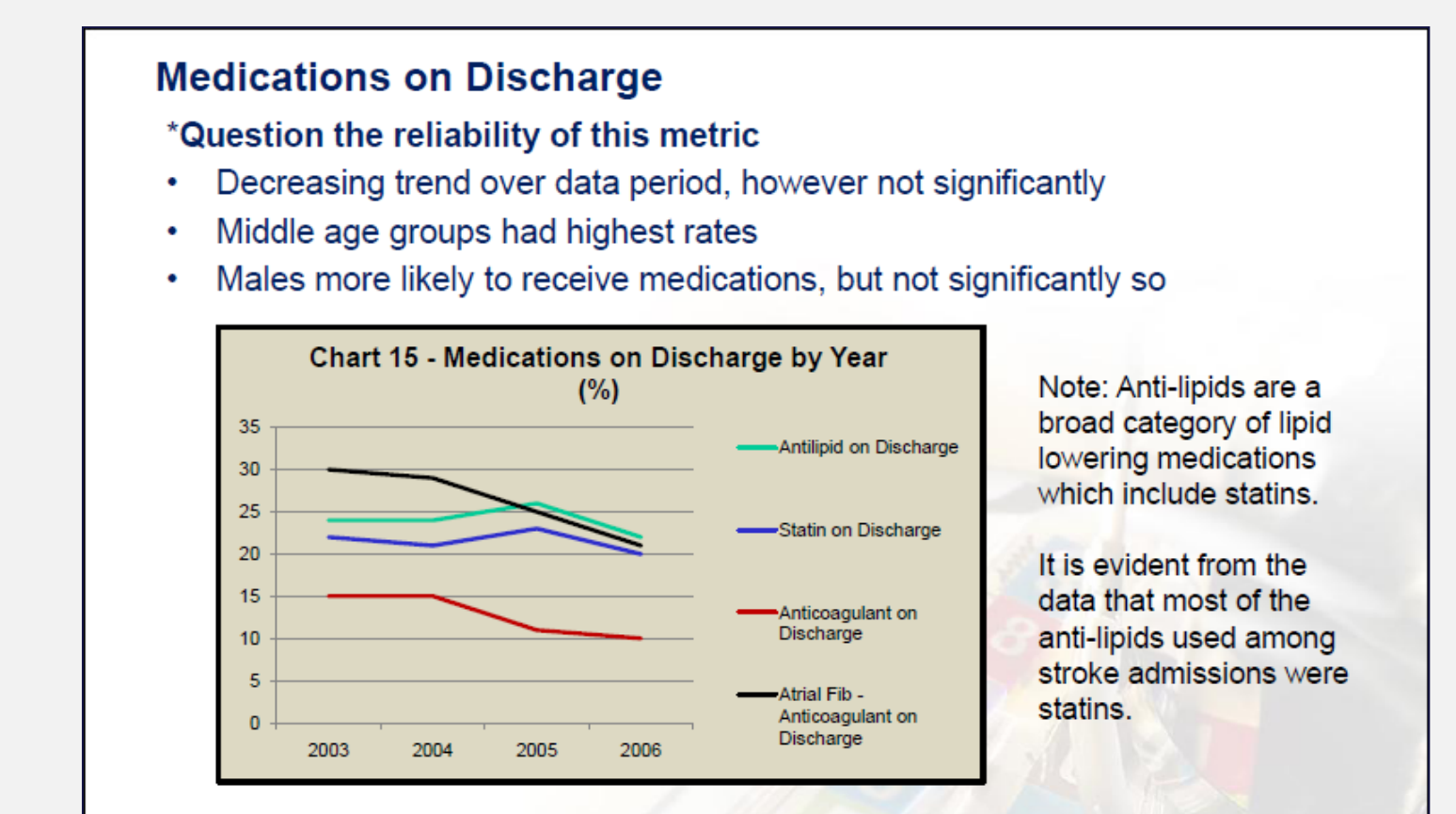
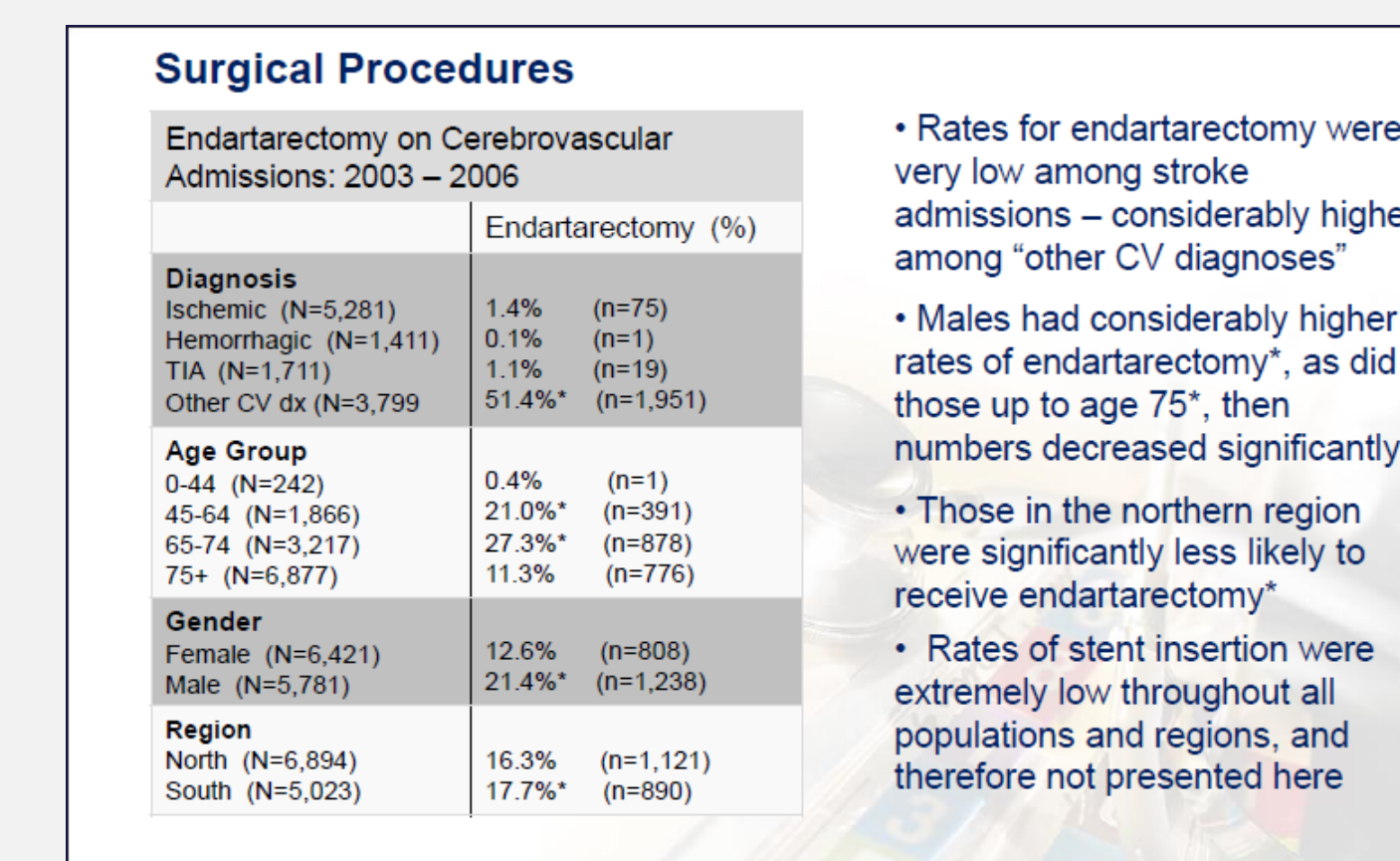
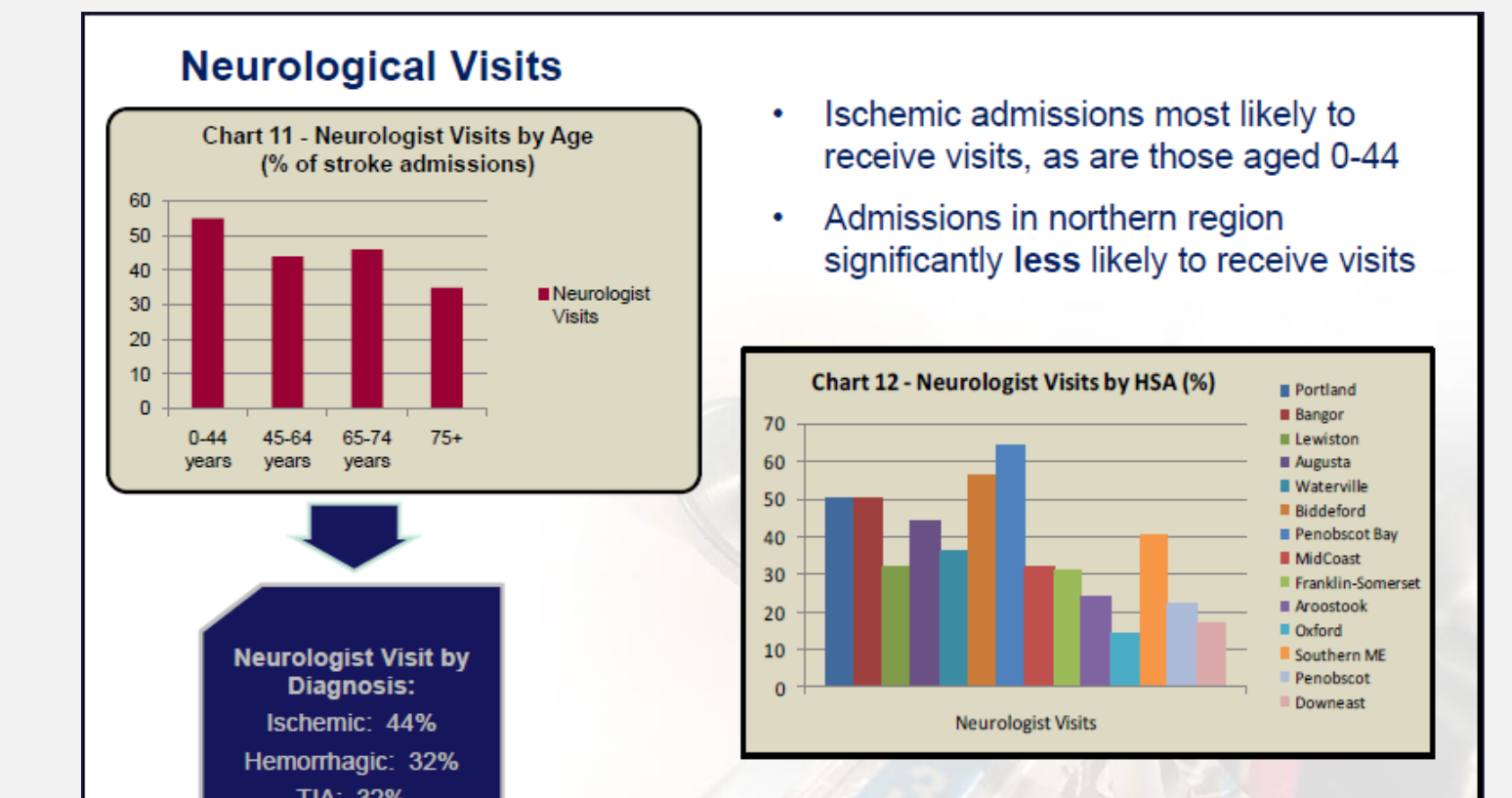
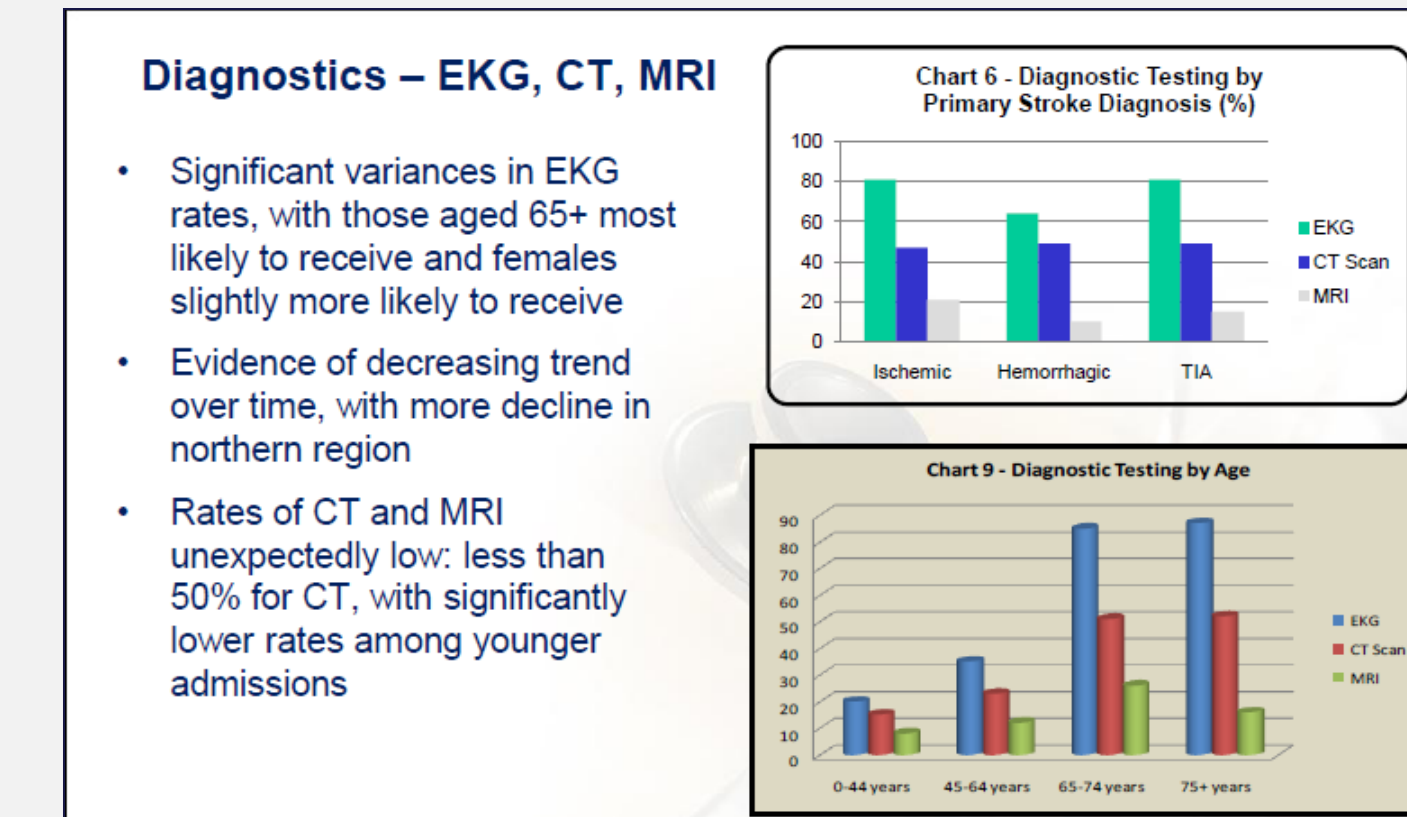
Acknowledgements

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Results Continued

Other metrics analyzed were considered unreliable due to discrepancies or lack of comparable measures between sources to prove or disprove claims results. These included:

- Use of diagnostics, including EKG, CT, and MRI: rates were lower than expected in claims results, possibly due to inconsistencies with coding and/or billing among sites - presence of time to CT or MRI metric from GWTG was counted as a positive, and rates were significantly higher within GWTG databases
- Medications on discharge, including statins/lipid lowering meds, and anti-coagulants: claims data only included those admissions with drug coverage, and rates were lower than expected; GWTG-Stroke metrics were not comparable to disprove or prove the results
- Neurological visits and surgical procedures: there are no comparable GWTG metrics to prove/disprove the claims results



Conclusions/Implications for Practice

This analysis suggests that claims data includes useful metrics for ongoing study of the quality of state-wide stroke diagnosis and treatment, with five out of nine measures showing reasonable correlation. Further investigation will determine how this data can be used most effectively to improve state-wide stroke systems of care.

Moving Forward:

- Share baseline data with state-wide partners, organizations and the public, to promote support for continued improvements to stroke systems of care in Maine
- Utilize baseline data to inform ongoing stroke systems work and assist with addressing identified gaps
- Collaborate with NECC Acute Care Workgroup to expand scope of stroke claims analysis, including addition of more recent data, Medicaid admissions, and cost data

Contact Information

Danielle Louder - Project Manager
Maine CDC/DHHS Cardiovascular Health Program
Medical Care Development
11 Parkwood Drive - Augusta, ME
dlouder@mcd.org

Robert Stein, MD - Medical Director
Penobscot Bay Medical Center
Neurology Department
Six Glen Cove Drive - Rockport, ME
rstein@penbayhealthcare.org

