

# Background Data for Telestroke

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Prepared For



By

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& ASSOCIATES INC.

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## Summary

Based on available data, an average of 5,952 patients were admitted to B.C. hospitals for stroke associated care per year. Of these patients, 3,888 (65.3%) were admitted for ischemic events. The vast majority (91.1%) of patients admitted for ischemic events arrived via the hospital's emergency department. See Table on the following page.

Based on Canadian data, we assumed that 22% of the 3,888 patients (855) would arrive within 2 hours of their event onset, that 30% (1,167) would arrive within 3 hours of their event onset, and that 35% (1,361) would arrive within 4.5 hours of their event onset. Furthermore, that 27% of these 855, 1,167 or 1,361 (231, 315 or 367, respectively) would meet eligibility criteria for tPA.

Based on international data, we assumed that 28% of the 3,888 patients (1,089) would arrive within 2 hours of their event onset, that 38% (1,478) would arrive within 3 hours of their event onset, and that 44% (1,711) would arrive within 4.5 hours of their event onset. Furthermore, that 27% of these 1,089, 1,478 or 1,711 (294, 399 or 462, respectively) would meet eligibility criteria for tPA.

**Acute Cerebrovascular Syndrome - Acute Care Inpatient Summary**  
**BC Total and Selected Hospitals**  
**2005/06 to 2007/08 Average per Year**

|  | B.C.  | SMH   | RGH   | PAH   | RCH                                     | RJH   | CDH   | NRGH  | SJGH  |
|--|-------|-------|-------|-------|---|-------|-------|-------|-------|
| <b>Transient Ischemic Attack</b>   |       |       |       |       |   |       |       |       |       |
| Cases  | 1,077 | 54    | 28    | 40    | 36                                      | 24    | 15    | 48    | 10    |
| <b>Hemorrhagic Event of Central Nervous System</b>                               |       |       |       |       |   |       |       |       |       |
| Cases  | 986   | 47    | 34    | 27    | 72                                      | 11    | 14    | 32    | 18    |
| <b>Ischemic Event of Central Nervous System et al.</b>                           |       |       |       |       |   |       |       |       |       |
| Cases  | 3,888 | 192   | 119   | 120   | 188                                     | 64    | 71    | 133   | 57    |
| <b>Total</b>   |       |       |       |       |   |       |       |       |       |
| Cases  | 5,952 | 293   | 181   | 187   | 296                                     | 99    | 100   | 214   | 85    |
| <b>Percent of Cases</b>  |       |       |       |       |   |       |       |       |       |
| TIA  | 18.1% | 18.5% | 15.3% | 21.4% | 12.1%                                   | 24.2% | 15.4% | 22.6% | 12.2% |
| Hemorrhagic  | 16.6% | 16.1% | 18.8% | 14.4% | 24.4%                                   | 11.1% | 13.7% | 15.1% | 21.2% |
| Ischemic et al.  | 65.3% | 65.3% | 65.9% | 64.2% | 63.4%                                   | 64.8% | 70.9% | 62.3% | 66.7% |
| <b>Canadian Estimates</b>  |       |       |       |       |   |       |       |       |       |
| Assume <b>22%</b> of Patients with Ischemic Stroke Arrive at ER within 2 Hours   |       |       |       |       |   |       |       |       |       |
|  | 855   | 42    | 26    | 26    | 41                                      | 14    | 16    | 29    | 12    |
| Assume 27% of These Meet Inclusion Criteria for tPA                              |       |       |       |       |   |       |       |       |       |
|  | 231   | 11    | 7     | 7     | 11                                      | 4     | 4     | 8     | 3     |
| Assume <b>30%</b> of Patients with Ischemic Stroke Arrive at ER within 3 Hours   |       |       |       |       |   |       |       |       |       |
|  | 1,167 | 58    | 36    | 36    | 56                                      | 19    | 21    | 40    | 17    |
| Assume 27% of These Meet Inclusion Criteria for tPA                              |       |       |       |       |   |       |       |       |       |
|  | 315   | 16    | 10    | 10    | 15                                      | 5     | 6     | 11    | 5     |
| Assume <b>35%</b> of Patients with Ischemic Stroke Arrive at ER within 4.5 Hours |       |       |       |       |   |       |       |       |       |
|  | 1,361 | 67    | 42    | 42    | 66                                      | 23    | 25    | 47    | 20    |
| Assume 27% of These Meet Inclusion Criteria for tPA                              |       |       |       |       |   |       |       |       |       |
|  | 367   | 18    | 11    | 11    | 18                                      | 6     | 7     | 13    | 5     |
| <b>International Estimates</b>   |       |       |       |       |   |       |       |       |       |
| Assume <b>28%</b> of Patients with Ischemic Stroke Arrive at ER within 2 Hours   |       |       |       |       |   |       |       |       |       |
|  | 1,089 | 54    | 33    | 34    | 53                                      | 18    | 20    | 37    | 16    |
| Assume 27% of These Meet Inclusion Criteria for tPA                              |       |       |       |       |   |       |       |       |       |
|  | 294   | 14    | 9     | 9     | 14                                      | 5     | 5     | 10    | 4     |
| Assume <b>38%</b> of Patients with Ischemic Stroke Arrive at ER within 3 Hours   |       |       |       |       |   |       |       |       |       |
|  | 1,478 | 73    | 45    | 46    | 71                                      | 24    | 27    | 51    | 22    |
| Assume 27% of These Meet Inclusion Criteria for tPA                              |       |       |       |       |   |       |       |       |       |
|  | 399   | 20    | 12    | 12    | 19                                      | 7     | 7     | 14    | 6     |
| Assume <b>44%</b> of Patients with Ischemic Stroke Arrive at ER within 4.5 Hours |       |       |       |       |   |       |       |       |       |
|  | 1,711 | 84    | 53    | 53    | 83                                      | 28    | 31    | 59    | 25    |
| Assume 27% of These Meet Inclusion Criteria for tPA                              |       |       |       |       |   |       |       |       |       |
|  | 462   | 23    | 14    | 14    | 22                                      | 8     | 8     | 16    | 7     |
| <b>Notes:</b>  |       |       |       |       |   |       |       |       |       |
| SMH = Surrey Memorial Hospital   |       |       |       |       | RJH= Royal Jubilee Hospital             |       |       |       |       |
| RGH = Richmond General Hospital  |       |       |       |       | CDH= Cowichan District Hospital         |       |       |       |       |
| PAH = Peace Arch Hospital  |       |       |       |       | NRGH= Nanaimo Regional General Hospital |       |       |       |       |
| RCH= Royal Columbian Hospital  |       |       |       |       | SJGH= St. Joseph's General Hospital     |       |       |       |       |
| Data Source: HealthIdeas Hospital Services Workload Report                       |       |       |       |       |   |       |       |       |       |

## Data Sources and Assumptions

- Raw data on the inpatient discharges, length of stay, resource intensity weight (RIW) and the proportion of patients admitted through the hospital's emergency department were derived from the BC Ministry of Health Healthideas data system. A sample report from that system is included in Appendix A.
- We extracted data for the following Case Mix Group Plus (CMG+) categories:
  - ✓ Transient Ischemic Attack (29)
  - ✓ Hemorrhagic Event of Central Nervous System (25)
  - ✓ Ischemic Event of Central Nervous System (26)
  - ✓ Cerebrovascular Disorder (27)
  - ✓ Unspecified Stroke (28)
- In the summary report, the latter three categories are grouped as "Ischemic Event of Central Nervous System et al."
- Detailed data on inpatient discharges, length of stay, resource intensity weight (RIW) and the proportion of patients admitted through the hospital's emergency department for the last seven years are included in Appendix B.
- Support for the following assumptions is provided in Appendix C:
  - That 27% of patients with an ischemic event who arrive at the Emergency Department in a timely fashion meet eligibility criteria for tPA.
  - In Canada, 30% of patients with an ischemic event arrive within 3 hours of their event onset and 36% within 4.5 hours of their event onset.
  - Internationally, 38% of patients with an ischemic event arrive within 3 hours of their event onset and 44% within 4.5 hours of their event onset.
- The availability of the revised provincial stroke registry will allow for more complete and accurate data.

## Appendix A: Healthideas Sample Report

### Healthideas Summary Reports HOSPITAL SERVICES WORKLOAD Hospital Workload Comparison to Peer and BC

#### Notes

1. Based on BC Hospital Discharge Data
2. In compliance with the Abortion Services Statutes Amendment Act, 2001, which restricts the dissemination of statistical information, Healthideas excludes medical services for the termination of pregnancy (abortion services). Note that some labels in Healthideas output use medical terms such as abortive or aborted; nevertheless, that output excludes abortion services as defined by the Act.
3. Riverview Hospital discharge records with more than 180 total stay days have been excluded.

| Dimensions                     |                            |
|--------------------------------|----------------------------|
| Parameter Name                 | Value                      |
| Case Measure                   | All Cases                  |
| Day Measure                    | AR Days Only               |
| Report by Category or Hospital | Report By Medical Category |
| Medical Category               | Case Mix Group Plus (CMG+) |

| Selection Criteria        |  |
|---------------------------|--|
| Parameter Name            | Value  |
| Fiscal Year               | 2007/2008                                    |
| BC Care Levels            | Acute Care                                   |
| BC Care Levels            | Rehabilitation                               |
| Include Only BC Hospitals | Include Only BC Hospitals                    |
| BC Residents Only         | Include All Clients Admitted To BC Hospitals |
| Newborn Hospital Records  | Do Not Include Hospital Records for Newborns |
| Hospitals                 | Surrey Memorial Hospital (116)               |
| Hospitals                 | Richmond Hospital (121)                      |
| Hospitals                 | Peace Arch District Hospital (131)           |
| Peer Comparison           | Default Group                                |

| Presentation options                              |                       |
|---|-----------------------|
| Parameter Name                                    | Value                 |
| Sort Within Page Groups                           | Medical Category Code |
| Sort Direction                                    | Low to High           |
| Select Top N Medical Categories by Measure        | Cases Count           |
| Select Top N Medical Categories by BC or Hospital | Across All of BC      |

| Case Mix Group Plus (CMG+) |  | Hospital Totals                    |             |                 |            |              |              | B.C. Totals |                 |            |              |              |
|----------------------------|--|------------------------------------|-------------|-----------------|------------|--------------|--------------|-------------|-----------------|------------|--------------|--------------|
| Code                       | Description                                      | Hospital                           | Total Cases | Total Stay Days | Total RIW+ | Average Stay | Average RIW+ | Total Cases | Total Stay Days | Total RIW+ | Average Stay | Average RIW+ |
| 25                         | Hemorrhagic Event of Central Nervous System (25) | Surrey Memorial Hospital (116)     | 43          | 333             | 64.1       | 7.7          | 1.5          | 943         | 8992            | 2258.6     | 9.5          | 2.4          |
| 26                         | Ischemic Event of Central Nervous System (26)    | Surrey Memorial Hospital (116)     | 197         | 5705            | 1012.0     | 29.0         | 5.1          | 2055        | 31522           | 7029.8     | 15.3         | 3.4          |
| 27                         | Cerebrovascular Disorder (27)                    | Surrey Memorial Hospital (116)     | 9           | 87              | 18.0       | 9.7          | 2.0          | 308         | 2991            | 618.2      | 9.7          | 2.0          |
| 28                         | Unspecified Stroke (28)                          | Surrey Memorial Hospital (116)     | 41          | 455             | 66.3       | 11.1         | 1.6          | 1409        | 13232           | 3001.0     | 9.4          | 2.1          |
| 29                         | Transient Ischemic Attack (29)                   | Surrey Memorial Hospital (116)     | 52          | 245             | 38.6       | 4.7          | 0.7          | 1079        | 4045            | 870.7      | 3.7          | 0.8          |
| 25                         | Hemorrhagic Event of Central Nervous System (25) | Richmond Hospital (121)            | 42          | 390             | 87.2       | 9.3          | 2.1          | 943         | 8992            | 2258.6     | 9.5          | 2.4          |
| 26                         | Ischemic Event of Central Nervous System (26)    | Richmond Hospital (121)            | 68          | 1009            | 255.5      | 14.8         | 3.8          | 2055        | 31522           | 7029.8     | 15.3         | 3.4          |
| 27                         | Cerebrovascular Disorder (27)                    | Richmond Hospital (121)            | 8           | 90              | 9.0        | 11.2         | 1.1          | 308         | 2991            | 618.2      | 9.7          | 2.0          |
| 28                         | Unspecified Stroke (28)                          | Richmond Hospital (121)            | 40          | 411             | 73.1       | 10.3         | 1.8          | 1409        | 13232           | 3001.0     | 9.4          | 2.1          |
| 29                         | Transient Ischemic Attack (29)                   | Richmond Hospital (121)            | 30          | 94              | 18.7       | 3.1          | 0.6          | 1079        | 4045            | 870.7      | 3.7          | 0.8          |
| 25                         | Hemorrhagic Event of Central Nervous System (25) | Peace Arch District Hospital (131) | 28          | 368             | 60.2       | 13.1         | 2.2          | 943         | 8992            | 2258.6     | 9.5          | 2.4          |
| 26                         | Ischemic Event of Central Nervous System (26)    | Peace Arch District Hospital (131) | 54          | 1177            | 224.2      | 21.8         | 4.2          | 2055        | 31522           | 7029.8     | 15.3         | 3.4          |
| 27                         | Cerebrovascular Disorder (27)                    | Peace Arch District Hospital (131) | 5           | 102             | 11.4       | 20.4         | 2.3          | 308         | 2991            | 618.2      | 9.7          | 2.0          |
| 28                         | Unspecified Stroke (28)                          | Peace Arch District Hospital (131) | 35          | 550             | 95.9       | 15.7         | 2.7          | 1409        | 13232           | 3001.0     | 9.4          | 2.1          |
| 29                         | Transient Ischemic Attack (29)                   | Peace Arch District Hospital (131) | 39          | 157             | 32.8       | 4.0          | 0.8          | 1079        | 4045            | 870.7      | 3.7          | 0.8          |

## Appendix B: Detailed Data for B.C. and Selected Hospitals

| <b>Acute Cerebrovascular Syndrome - Acute Care Inpatient Summary</b> |             |            |            |            |            |            |            |             |             |
|--|-------------|------------|------------|------------|------------|------------|------------|-------------|-------------|
| <b>BC Total and Selected Hospitals</b>                               |             |            |            |            |            |            |            |             |             |
| <b>2005/06 to 2007/08 Average</b>                                    |             |            |            |            |            |            |            |             |             |
|  | <b>B.C.</b> | <b>SMH</b> | <b>RGH</b> | <b>PAH</b> | <b>RCH</b> | <b>RJH</b> | <b>CDH</b> | <b>NRGH</b> | <b>SJGH</b> |
| <b>Transient Ischemic Attack</b>                                     |             |            |            |            |            |            |            |             |             |
| Cases  | 1,077       | 54         | 28         | 40         | 36         | 24         | 15         | 48          | 10          |
| % Through ER   | 96.2%       | 99.4%      | 98.8%      | 99.2%      | 98.1%      | 93.1%      | 100.0%     | 98.6%       | 96.8%       |
| ALOS   | 3.63        | 4.40       | 4.73       | 3.28       | 5.62       | 2.28       | 5.09       | 3.97        | 3.13        |
| Patient Days   | 3,911       | 239        | 131        | 131        | 202        | 55         | 78         | 192         | 32          |
| Avg RIW  | 0.757       | 0.682      | 0.861      | 0.823      | 0.919      | 0.618      | 1.141      | 0.661       | 0.697       |
| Weighted Cases   | 815         | 37         | 24         | 33         | 33         | 15         | 18         | 32          | 7           |
| <b>Hemorrhagic Event of Central Nervous System</b>                   |             |            |            |            |            |            |            |             |             |
| Cases  | 986         | 47         | 34         | 27         | 72         | 11         | 14         | 32          | 18          |
| % Through ER   | 86.2%       | 97.9%      | 92.2%      | 95.1%      | 66.8%      | 93.9%      | 95.1%      | 89.7%       | 98.1%       |
| ALOS   | 9.77        | 12.56      | 10.29      | 11.33      | 12.24      | 7.30       | 9.22       | 8.93        | 4.80        |
| Patient Days   | 9,636       | 595        | 350        | 306        | 885        | 80         | 126        | 289         | 86          |
| Avg RIW  | 2.383       | 2.898      | 2.154      | 2.180      | 2.883      | 2.345      | 2.434      | 2.288       | 1.183       |
| Weighted Cases   | 2,351       | 137        | 73         | 59         | 209        | 26         | 33         | 74          | 21          |
| <b>Ischemic Event of Central Nervous System et al.</b>               |             |            |            |            |            |            |            |             |             |
| Cases  | 3,888       | 192        | 119        | 120        | 188        | 64         | 71         | 133         | 57          |
| % Through ER   | 91.1%       | 97.0%      | 95.8%      | 94.2%      | 94.2%      | 90.0%      | 94.1%      | 98.9%       | 97.7%       |
| ALOS   | 12.65       | 24.15      | 12.89      | 18.04      | 13.47      | 10.72      | 12.07      | 10.80       | 11.36       |
| Patient Days   | 49,174      | 4,630      | 1,538      | 2,165      | 2,532      | 689        | 853        | 1,440       | 644         |
| Avg RIW  | 2.754       | 4.295      | 2.480      | 3.294      | 2.719      | 2.815      | 3.316      | 2.400       | 3.022       |
| Weighted Cases   | 10,708      | 823        | 296        | 395        | 511        | 181        | 234        | 320         | 171         |
| <b>Total</b>   |             |            |            |            |            |            |            |             |             |
| Cases  | 5,952       | 293        | 181        | 187        | 296        | 99         | 100        | 214         | 85          |
| % Through ER   | 91.2%       | 97.6%      | 95.6%      | 95.4%      | 83.1%      | 89.6%      | 95.3%      | 96.7%       | 97.3%       |
| ALOS   | 10.54       | 18.63      | 11.15      | 13.91      | 12.21      | 8.30       | 10.61      | 8.97        | 8.97        |
| Patient Days   | 62,721      | 5,464      | 2,019      | 2,602      | 3,619      | 824        | 1,057      | 1,920       | 763         |
| Avg RIW  | 2.331       | 3.400      | 2.171      | 2.605      | 2.540      | 2.232      | 2.861      | 1.990       | 2.350       |
| Weighted Cases   | 13,874      | 997        | 393        | 487        | 753        | 222        | 285        | 426         | 200         |
| <b>Percent of Cases</b>  |             |            |            |            |            |            |            |             |             |
| TIA  | 18.1%       | 18.5%      | 15.3%      | 21.4%      | 12.1%      | 24.2%      | 15.4%      | 22.6%       | 12.2%       |
| Hemorrhagic  | 16.6%       | 16.1%      | 18.8%      | 14.4%      | 24.4%      | 11.1%      | 13.7%      | 15.1%       | 21.2%       |
| Ischemic et al.  | 65.3%       | 65.3%      | 65.9%      | 64.2%      | 63.4%      | 64.8%      | 70.9%      | 62.3%       | 66.7%       |

## Acute Cerebrovascular Syndrome

### Acute Care Inpatient Summary

British Columbia

|   | 2001/02 |        | 2002/03 |        | 2003/04 |        | 2004/05 |        | 2005/06 |        | 2006/07 |        | 2007/08 |        | Avg. 05/06 to 07/08 |        | % ER  |
|---|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------------------|--------|-------|
|   | All     | ER     | All     | ER     | All     | ER     | All     | ER     | All     | ER     | All     | ER     | All     | ER     | All                 | ER     |       |
| <b>Hemorrhagic Event of Central Nervous System (25)</b> |         |        |         |        |         |        |         |        |         |        |         |        |         |        |                     |        |       |
| Cases   | 1,105   | 1,003  | 938     | 826    | 942     | 818    | 965     | 838    | 1,039   | 881    | 977     | 837    | 943     | 834    | 986                 | 851    | 86.2% |
| ALOS  | 7.64    | 7.38   | 8.83    | 8.60   | 8.36    | 8.19   | 8.56    | 8.15   | 9.48    | 9.04   | 10.30   | 9.65   | 9.54    | 9.30   | 9.77                | 9.33   |       |
| Patient Days  | 8,437   | 7,403  | 8,286   | 7,106  | 7,877   | 6,702  | 8,256   | 6,830  | 9,851   | 7,967  | 10,064  | 8,075  | 8,992   | 7,757  | 9,636               | 7,933  |       |
| Avg RIW   | 1.894   | 1.815  | 2.476   | 2.339  | 2.083   | 1.973  | 2.198   | 2.076  | 2.213   | 2.036  | 2.553   | 2.334  | 2.395   | 2.156  | 2.383               | 2.173  |       |
| Weighted Cases  | 2,093   | 1,821  | 2,322   | 1,932  | 1,962   | 1,614  | 2,121   | 1,740  | 2,299   | 1,794  | 2,494   | 1,954  | 2,259   | 1,798  | 2,351               | 1,848  |       |
| <b>Ischemic Event of Central Nervous System (26)</b>    |         |        |         |        |         |        |         |        |         |        |         |        |         |        |                     |        |       |
| Cases   | 1,918   | 1,777  | 1,909   | 1,776  | 1,990   | 1,854  | 2,028   | 1,833  | 2,071   | 1,868  | 2,046   | 1,845  | 2,055   | 1,952  | 2,057               | 1,888  | 91.8% |
| ALOS  | 15.35   | 15.29  | 14.48   | 14.44  | 13.60   | 13.54  | 13.10   | 12.78  | 14.93   | 14.68  | 14.33   | 14.12  | 15.34   | 15.38  | 14.87               | 14.74  |       |
| Patient Days  | 29,433  | 27,166 | 27,636  | 25,647 | 27,066  | 25,095 | 26,559  | 23,432 | 30,920  | 27,421 | 29,313  | 26,050 | 31,522  | 30,012 | 30,585              | 27,828 |       |
| Avg RIW   | 3.689   | 3.659  | 3.483   | 3.428  | 3.366   | 3.287  | 3.197   | 3.087  | 3.234   | 3.166  | 3.215   | 3.130  | 3.421   | 3.341  | 3.290               | 3.215  |       |
| Weighted Cases  | 7,076   | 6,502  | 6,648   | 6,089  | 6,698   | 6,094  | 6,483   | 5,658  | 6,698   | 5,915  | 6,577   | 5,775  | 7,030   | 6,521  | 6,768               | 6,070  |       |
| <b>Cerebrovascular Disorder (27)</b>                    |         |        |         |        |         |        |         |        |         |        |         |        |         |        |                     |        |       |
| Cases   | 392     | 260    | 387     | 253    | 413     | 240    | 294     | 199    | 296     | 235    | 312     | 244    | 308     | 241    | 305                 | 240    | 78.6% |
| ALOS  | 8.56    | 9.22   | 7.88    | 8.48   | 10.53   | 8.86   | 8.03    | 8.28   | 10.12   | 10.95  | 7.98    | 8.26   | 9.71    | 9.86   | 9.25                | 9.68   |       |
| Patient Days  | 3,355   | 2,397  | 3,049   | 2,146  | 4,348   | 2,127  | 2,360   | 1,648  | 2,995   | 2,574  | 2,489   | 2,015  | 2,991   | 2,377  | 2,825               | 2,322  |       |
| Avg RIW   | 2.780   | 2.654  | 1.986   | 1.742  | 2.537   | 2.161  | 2.351   | 1.803  | 2.073   | 2.035  | 1.857   | 1.872  | 2.007   | 1.854  | 1.977               | 1.919  |       |
| Weighted Cases  | 1,090   | 690    | 769     | 441    | 1,048   | 519    | 691     | 359    | 614     | 478    | 580     | 457    | 618     | 447    | 604                 | 461    |       |
| <b>Unspecified Stroke (28)</b>                          |         |        |         |        |         |        |         |        |         |        |         |        |         |        |                     |        |       |
| Cases   | 1,947   | 1,769  | 1,827   | 1,681  | 1,648   | 1,522  | 1,770   | 1,580  | 1,607   | 1,454  | 1,561   | 1,451  | 1,409   | 1,331  | 1,526               | 1,412  | 92.5% |
| ALOS  | 10.96   | 10.42  | 11.40   | 11.44  | 11.17   | 10.94  | 10.21   | 9.81   | 10.51   | 10.05  | 11.00   | 10.66  | 9.39    | 9.11   | 10.33               | 9.96   |       |
| Patient Days  | 21,347  | 18,428 | 20,826  | 19,231 | 18,402  | 16,656 | 18,077  | 15,493 | 16,884  | 14,616 | 17,176  | 15,469 | 13,232  | 12,123 | 15,764              | 14,069 |       |
| Avg RIW   | 2.560   | 2.393  | 2.572   | 2.555  | 2.229   | 2.153  | 2.245   | 2.049  | 2.141   | 2.006  | 2.285   | 2.120  | 2.130   | 2.017  | 2.187               | 2.049  |       |
| Weighted Cases  | 4,985   | 4,233  | 4,699   | 4,296  | 3,673   | 3,276  | 3,973   | 3,238  | 3,441   | 2,917  | 3,567   | 3,076  | 3,001   | 2,685  | 3,336               | 2,893  |       |
| <b>Transient Ischemic Attack (29)</b>                   |         |        |         |        |         |        |         |        |         |        |         |        |         |        |                     |        |       |
| Cases   | 1,132   | 1,065  | 1,088   | 1,036  | 1,081   | 1,032  | 1,108   | 1,061  | 1,104   | 1,049  | 1,049   | 1,019  | 1,079   | 1,042  | 1,077               | 1,037  | 96.2% |
| ALOS  | 3.68    | 3.65   | 3.94    | 3.91   | 3.72    | 3.66   | 3.46    | 3.44   | 3.80    | 3.78   | 3.33    | 3.36   | 3.75    | 3.76   | 3.63                | 3.63   |       |
| Patient Days  | 4,169   | 3,889  | 4,289   | 4,048  | 4,017   | 3,772  | 3,832   | 3,653  | 4,191   | 3,970  | 3,497   | 3,421  | 4,045   | 3,913  | 3,911               | 3,768  |       |
| Avg RIW   | 0.766   | 0.752  | 0.811   | 0.794  | 0.738   | 0.731  | 0.720   | 0.715  | 0.715   | 0.691  | 0.749   | 0.752  | 0.807   | 0.814  | 0.757               | 0.752  |       |
| Weighted Cases  | 867     | 801    | 883     | 823    | 798     | 755    | 797     | 759    | 789     | 725    | 786     | 766    | 871     | 848    | 815                 | 780    |       |
| <b>Total</b>  |         |        |         |        |         |        |         |        |         |        |         |        |         |        |                     |        |       |
| Cases   | 6,494   | 5,874  | 6,149   | 5,572  | 6,074   | 5,466  | 6,165   | 5,511  | 6,117   | 5,487  | 5,945   | 5,396  | 5,794   | 5,400  | 5,952               | 5,428  | 91.2% |
| ALOS  | 10.28   | 10.09  | 10.42   | 10.44  | 10.16   | 9.94   | 9.58    | 9.26   | 10.60   | 10.31  | 10.52   | 10.20  | 10.49   | 10.40  | 10.54               | 10.30  |       |
| Patient Days  | 66,741  | 59,283 | 64,086  | 58,178 | 61,710  | 54,352 | 59,084  | 51,056 | 64,841  | 56,548 | 62,539  | 55,030 | 60,782  | 56,182 | 62,721              | 55,920 |       |
| Avg RIW   | 2.481   | 2.391  | 2.492   | 2.437  | 2.334   | 2.243  | 2.282   | 2.133  | 2.263   | 2.156  | 2.356   | 2.229  | 2.378   | 2.277  | 2.331               | 2.220  |       |
| Weighted Cases  | 16,111  | 14,047 | 15,321  | 13,580 | 14,179  | 12,258 | 14,066  | 11,753 | 13,841  | 11,829 | 14,004  | 12,027 | 13,778  | 12,298 | 13,874              | 12,051 |       |
| <b>Open Carotid Endarterectomy (12)</b>                 |         |        |         |        |         |        |         |        |         |        |         |        |         |        |                     |        |       |
| Cases   | 679     | 69     | 672     | 58     | 698     | 62     | 735     | 69     | 663     | 67     | 608     | 50     | 589     | 62     | 620                 | 60     | 9.6%  |
| ALOS  | 4.62    | 14.70  | 3.78    | 13.07  | 3.61    | 10.18  | 3.89    | 12.43  | 4.18    | 13.22  | 3.82    | 11.70  | 3.80    | 12.13  | 3.94                | 12.42  |       |
| Patient Days  | 3,139   | 1,014  | 2,540   | 758    | 2,522   | 631    | 2,862   | 858    | 2,773   | 886    | 2,323   | 585    | 2,241   | 752    | 2,446               | 741    |       |
| Avg RIW   | 1.831   | 3.546  | 1.709   | 3.838  | 1.574   | 2.747  | 1.609   | 3.014  | 1.809   | 3.381  | 1.707   | 2.686  | 1.685   | 3.232  | 1.736               | 3.135  |       |
| Weighted Cases  | 1,243   | 245    | 1,148   | 223    | 1,099   | 170    | 1,183   | 208    | 1,200   | 227    | 1,038   | 134    | 993     | 200    | 1,077               | 187    |       |

## Acute Cerebrovascular Syndrome

### Acute Care Inpatient Summary

Surrey Memorial Hospital

|   | 2001/02 |        | 2002/03 |       | 2003/04 |       | 2004/05 |       | 2005/06 |       | 2006/07 |       | 2007/08 |       | Avg. 05/06 to 07/08 |       | % ER  |
|---|---------|--------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------------------|-------|-------|
|   | All     | ER     | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    |                     |       |       |
| <b>Hemorrhagic Event of Central Nervous System (25)</b> |         |        |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 58      | 57     | 40      | 39    | 41      | 39    | 59      | 59    | 49      | 47    | 50      | 49    | 43      | 43    | 47                  | 46    | 97.9% |
| ALOS  | 5.34    | 5.40   | 6.93    | 7.03  | 7.10    | 7.41  | 7.41    | 7.41  | 13.53   | 13.91 | 15.76   | 15.90 | 7.74    | 7.74  | 12.56               | 12.71 |       |
| Patient Days  | 310     | 308    | 277     | 274   | 291     | 289   | 437     | 437   | 663     | 654   | 788     | 779   | 333     | 333   | 595                 | 589   |       |
| Avg RIW   | 1.197   | 1.207  | 1.793   | 1.787 | 1.580   | 1.638 | 1.317   | 1.317 | 2.880   | 2.962 | 4.126   | 4.173 | 1.491   | 1.491 | 2.898               | 2.934 |       |
| Weighted Cases  | 69      | 69     | 72      | 70    | 65      | 64    | 78      | 78    | 141     | 139   | 206     | 205   | 64      | 64    | 137                 | 136   |       |
| <b>Ischemic Event of Central Nervous System (26)</b>    |         |        |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 104     | 101    | 82      | 80    | 92      | 91    | 114     | 107   | 147     | 143   | 100     | 100   | 197     | 192   | 148                 | 145   | 98.0% |
| ALOS  | 26.78   | 26.23  | 28.15   | 27.81 | 29.75   | 30.05 | 21.76   | 20.58 | 27.29   | 27.45 | 25.25   | 25.25 | 28.96   | 28.72 | 27.57               | 27.51 |       |
| Patient Days  | 2,785   | 2,649  | 2,308   | 2,225 | 2,737   | 2,735 | 2,481   | 2,202 | 4,012   | 3,925 | 2,525   | 2,525 | 5,705   | 5,515 | 4,081               | 3,988 |       |
| Avg RIW   | 6.044   | 5.856  | 6.491   | 6.110 | 6.974   | 7.042 | 4.383   | 3.761 | 4.965   | 5.010 | 4.422   | 4.422 | 5.137   | 4.873 | 4.919               | 4.815 |       |
| Weighted Cases  | 629     | 592    | 532     | 489   | 642     | 641   | 500     | 402   | 730     | 717   | 442     | 442   | 1,012   | 936   | 728                 | 698   |       |
| <b>Cerebrovascular Disorder (27)</b>                    |         |        |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 14      | 12     | 7       | 3     | 3       | 3     | 5       | 5     | 6       | 6     | 3       | 3     | 9       | 8     | 6                   | 6     | 94.4% |
| ALOS  | 17.36   | 7.92   | 5.86    | 11.33 | 15.67   | 15.67 | 5.20    | 5.20  | 6.33    | 6.33  | 19.67   | 19.67 | 9.67    | 6.50  | 10.22               | 8.76  |       |
| Patient Days  | 243     | 95     | 41      | 34    | 47      | 47    | 26      | 26    | 38      | 38    | 59      | 59    | 87      | 52    | 61                  | 50    |       |
| Avg RIW   | 4.850   | 2.442  | 1.071   | 0.833 | 3.100   | 3.100 | 0.920   | 0.920 | 1.283   | 1.283 | 3.867   | 3.867 | 2.000   | 1.163 | 2.072               | 1.682 |       |
| Weighted Cases  | 68      | 29     | 8       | 3     | 9       | 9     | 5       | 5     | 8       | 8     | 12      | 12    | 18      | 9     | 12                  | 10    |       |
| <b>Unspecified Stroke (28)</b>                          |         |        |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 93      | 92     | 96      | 96    | 63      | 63    | 45      | 45    | 42      | 37    | 30      | 29    | 41      | 40    | 38                  | 35    | 93.8% |
| ALOS  | 17.56   | 17.29  | 20.27   | 20.27 | 16.59   | 16.59 | 10.82   | 10.82 | 16.74   | 17.54 | 10.17   | 10.41 | 11.10   | 11.25 | 12.95               | 13.22 |       |
| Patient Days  | 1,633   | 1,591  | 1,946   | 1,946 | 1,045   | 1,045 | 487     | 487   | 703     | 649   | 305     | 302   | 455     | 450   | 488                 | 467   |       |
| Avg RIW   | 3.186   | 3.159  | 4.696   | 4.696 | 2.805   | 2.805 | 1.667   | 1.667 | 3.224   | 3.349 | 1.550   | 1.576 | 1.617   | 1.635 | 2.196               | 2.217 |       |
| Weighted Cases  | 296     | 291    | 451     | 451   | 177     | 177   | 75      | 75    | 135     | 124   | 47      | 46    | 66      | 65    | 83                  | 78    |       |
| <b>Transient Ischemic Attack (29)</b>                   |         |        |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 23      | 22     | 33      | 33    | 35      | 35    | 42      | 42    | 68      | 67    | 43      | 43    | 52      | 52    | 54                  | 54    | 99.4% |
| ALOS  | 3.96    | 4.09   | 4.58    | 4.58  | 4.60    | 4.60  | 7.19    | 7.19  | 4.00    | 3.97  | 4.67    | 4.67  | 4.71    | 4.71  | 4.40                | 4.40  |       |
| Patient Days  | 91      | 90     | 151     | 151   | 161     | 161   | 302     | 302   | 272     | 266   | 201     | 201   | 245     | 245   | 239                 | 237   |       |
| Avg RIW   | 0.557   | 0.564  | 0.788   | 0.788 | 0.866   | 0.866 | 1.300   | 1.300 | 0.609   | 0.601 | 0.726   | 0.726 | 0.742   | 0.742 | 0.682               | 0.680 |       |
| Weighted Cases  | 13      | 12     | 26      | 26    | 30      | 30    | 55      | 55    | 41      | 40    | 31      | 31    | 39      | 39    | 37                  | 37    |       |
| <b>Total</b>  |         |        |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 292     | 284    | 258     | 251   | 234     | 231   | 265     | 258   | 312     | 300   | 226     | 224   | 342     | 335   | 293                 | 286   | 97.6% |
| ALOS  | 17.34   | 16.67  | 18.31   | 18.45 | 18.29   | 18.52 | 14.09   | 13.39 | 18.23   | 18.44 | 17.16   | 17.26 | 19.96   | 19.69 | 18.63               | 18.62 |       |
| Patient Days  | 5,062   | 4,733  | 4,723   | 4,630 | 4,281   | 4,277 | 3,733   | 3,454 | 5,688   | 5,532 | 3,878   | 3,866 | 6,825   | 6,595 | 5,464               | 5,331 |       |
| Avg RIW   | 3.682   | 3.495  | 4.218   | 4.135 | 3.943   | 3.987 | 2.685   | 2.381 | 3.383   | 3.425 | 3.265   | 3.282 | 3.506   | 3.323 | 3.400               | 3.348 |       |
| Weighted Cases  | 1,075   | 993    | 1,088   | 1,038 | 923     | 921   | 712     | 614   | 1,055   | 1,028 | 738     | 735   | 1,199   | 1,113 | 997                 | 959   |       |
| <b>Open Carotid Endarterectomy (12)</b>                 |         |        |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 10      | 2      | 24      | 2     | 18      |       | 12      | 2     | 20      | 3     | 7       | 1     | 15      | 3     | 14                  | 2     | 16.7% |
| ALOS  | 15.30   | 58.00  | 7.08    | 34.00 | 3.61    |       | 7.58    | 30.50 | 7.10    | 12.33 | 9.43    | 23.00 | 16.40   | 43.67 | 10.81               | 27.29 |       |
| Patient Days  | 153     | 116    | 170     | 68    | 65      |       | 91      | 61    | 142     | 37    | 66      | 23    | 246     | 131   | 151                 | 64    |       |
| Avg RIW   | 4.330   | 16.400 | 2.554   | 7.350 | 1.250   |       | 2.100   | 6.350 | 3.310   | 2.833 | 2.029   | 3.100 | 4.187   | 8.733 | 3.410               | 5.400 |       |
| Weighted Cases  | 43      | 33     | 61      | 15    | 23      |       | 25      | 13    | 66      | 9     | 14      | 3     | 63      | 26    | 48                  | 13    |       |

## Acute Cerebrovascular Syndrome

### Acute Care Inpatient Summary

Richmond General Hospital

|   | 2001/02 |       | 2002/03 |       | 2003/04 |       | 2004/05 |       | 2005/06 |       | 2006/07 |       | 2007/08 |        | Avg. 05/06 to 07/08 |       | % ER  |
|---|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|--------|---------------------|-------|-------|
|   | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER     |                     |       |       |
| <b>Hemorrhagic Event of Central Nervous System (25)</b> |         |       |         |       |         |       |         |       |         |       |         |       |         |        |                     |       |       |
| Cases   | 45      | 44    | 32      | 30    | 37      | 35    | 34      | 28    | 29      | 27    | 31      | 28    | 42      | 39     | 34                  | 31    | 92.2% |
| ALOS  | 8.04    | 8.07  | 6.34    | 6.70  | 12.43   | 12.11 | 15.56   | 10.64 | 10.03   | 10.59 | 11.90   | 11.14 | 9.29    | 7.97   | 10.29               | 9.67  |       |
| Patient Days  | 362     | 355   | 203     | 201   | 460     | 424   | 529     | 298   | 291     | 286   | 369     | 312   | 390     | 311    | 350                 | 303   |       |
| Avg RIW   | 2.671   | 2.659 | 1.581   | 1.567 | 2.319   | 2.143 | 2.882   | 1.600 | 1.610   | 1.681 | 2.768   | 2.479 | 2.076   | 1.785  | 2.154               | 1.962 |       |
| Weighted Cases  | 120     | 117   | 51      | 47    | 86      | 75    | 98      | 45    | 47      | 45    | 86      | 69    | 87      | 70     | 73                  | 61    |       |
| <b>Ischemic Event of Central Nervous System (26)</b>    |         |       |         |       |         |       |         |       |         |       |         |       |         |        |                     |       |       |
| Cases   | 73      | 69    | 65      | 64    | 76      | 73    | 70      | 68    | 81      | 76    | 71      | 67    | 68      | 65     | 73                  | 69    | 94.5% |
| ALOS  | 15.86   | 15.71 | 15.08   | 15.25 | 12.72   | 12.53 | 13.99   | 13.60 | 15.19   | 15.30 | 14.77   | 14.88 | 14.84   | 14.45  | 14.95               | 14.90 |       |
| Patient Days  | 1,158   | 1,084 | 980     | 976   | 967     | 915   | 979     | 925   | 1,230   | 1,163 | 1,049   | 997   | 1,009   | 939    | 1,096               | 1,033 |       |
| Avg RIW   | 4.747   | 4.642 | 3.900   | 3.852 | 2.247   | 2.204 | 2.213   | 2.085 | 2.472   | 2.422 | 2.793   | 2.742 | 3.757   | 3.635  | 2.973               | 2.904 |       |
| Weighted Cases  | 347     | 320   | 254     | 247   | 171     | 161   | 155     | 142   | 200     | 184   | 198     | 184   | 256     | 236    | 218                 | 201   |       |
| <b>Cerebrovascular Disorder (27)</b>                    |         |       |         |       |         |       |         |       |         |       |         |       |         |        |                     |       |       |
| Cases   | 9       | 9     | 9       | 7     | 9       | 7     | 6       | 5     | 3       | 3     | 9       | 8     | 8       | 8      | 7                   | 6     | 95.0% |
| ALOS  | 12.44   | 12.44 | 10.33   | 5.57  | 11.56   | 7.29  | 6.17    | 6.20  | 19.00   | 19.00 | 9.56    | 10.13 | 11.25   | 11.25  | 11.65               | 12.00 |       |
| Patient Days  | 112     | 112   | 93      | 39    | 104     | 51    | 37      | 31    | 57      | 57    | 86      | 81    | 90      | 90     | 78                  | 76    |       |
| Avg RIW   | 3.544   | 3.544 | 2.800   | 2.243 | 2.044   | 1.200 | 1.233   | 1.220 | 2.533   | 2.533 | 1.822   | 1.925 | 1.125   | 1.125  | 1.650               | 1.684 |       |
| Weighted Cases  | 32      | 32    | 25      | 16    | 18      | 8     | 7       | 6     | 8       | 8     | 16      | 15    | 9       | 9      | 11                  | 11    |       |
| <b>Unspecified Stroke (28)</b>                          |         |       |         |       |         |       |         |       |         |       |         |       |         |        |                     |       |       |
| Cases   | 38      | 38    | 50      | 49    | 39      | 39    | 42      | 38    | 33      | 32    | 45      | 45    | 40      | 39     | 39                  | 39    | 98.3% |
| ALOS  | 13.24   | 13.24 | 10.12   | 10.12 | 14.33   | 14.33 | 11.86   | 10.89 | 7.76    | 7.91  | 9.44    | 9.44  | 10.28   | 10.51  | 9.25                | 9.38  |       |
| Patient Days  | 503     | 503   | 506     | 496   | 559     | 559   | 498     | 414   | 256     | 253   | 425     | 425   | 411     | 410    | 364                 | 363   |       |
| Avg RIW   | 2.574   | 2.574 | 1.602   | 1.510 | 2.862   | 2.862 | 1.724   | 1.466 | 1.352   | 1.353 | 1.847   | 1.847 | 1.828   | 1.869  | 1.702               | 1.718 |       |
| Weighted Cases  | 98      | 98    | 80      | 74    | 112     | 112   | 72      | 56    | 45      | 43    | 83      | 83    | 73      | 73     | 67                  | 66    |       |
| <b>Transient Ischemic Attack (29)</b>                   |         |       |         |       |         |       |         |       |         |       |         |       |         |        |                     |       |       |
| Cases   | 32      | 32    | 28      | 28    | 25      | 25    | 23      | 22    | 27      | 27    | 26      | 26    | 30      | 29     | 28                  | 27    | 98.8% |
| ALOS  | 4.03    | 4.03  | 4.29    | 4.29  | 4.24    | 4.24  | 3.39    | 3.50  | 5.19    | 5.19  | 6.12    | 6.12  | 3.13    | 3.21   | 4.73                | 4.78  |       |
| Patient Days  | 129     | 129   | 120     | 120   | 106     | 106   | 78      | 77    | 140     | 140   | 159     | 159   | 94      | 93     | 131                 | 131   |       |
| Avg RIW   | 0.809   | 0.809 | 0.732   | 0.732 | 0.812   | 0.812 | 0.648   | 0.655 | 0.922   | 0.922 | 1.073   | 1.073 | 0.623   | 0.628  | 0.861               | 0.866 |       |
| Weighted Cases  | 26      | 26    | 21      | 21    | 20      | 20    | 15      | 14    | 25      | 25    | 28      | 28    | 19      | 18.2   | 24                  | 24    |       |
| <b>Total</b>  |         |       |         |       |         |       |         |       |         |       |         |       |         |        |                     |       |       |
| Cases   | 197     | 192   | 184     | 178   | 186     | 179   | 175     | 161   | 173     | 165   | 182     | 174   | 188     | 180    | 181                 | 173   | 95.6% |
| ALOS  | 11.49   | 11.37 | 10.34   | 10.29 | 11.81   | 11.48 | 12.12   | 10.84 | 11.41   | 11.51 | 11.47   | 11.34 | 10.61   | 10.24  | 11.15               | 11.01 |       |
| Patient Days  | 2,264   | 2,183 | 1,902   | 1,832 | 2,196   | 2,055 | 2,121   | 1,745 | 1,974   | 1,899 | 2,088   | 1,974 | 1,994   | 1,843  | 2,019               | 1,905 |       |
| Avg RIW   | 3.159   | 3.088 | 2.336   | 2.268 | 2.188   | 2.102 | 1.986   | 1.632 | 1.873   | 1.850 | 2.261   | 2.181 | 2.359   | 2.256  | 2.171               | 2.102 |       |
| Weighted Cases  | 622     | 593   | 430     | 404   | 407     | 376   | 348     | 263   | 324     | 305   | 412     | 380   | 444     | 406    | 393                 | 364   |       |
| <b>Open Carotid Endarterectomy (12)</b>                 |         |       |         |       |         |       |         |       |         |       |         |       |         |        |                     |       |       |
| Cases   | 28      |       | 20      | 2     | 19      | 1     | 22      | 2     | 21      | 3     | 15      | 1     | 15      | 2      | 17                  | 2     | 11.8% |
| ALOS  | 3.25    |       | 4.35    | 22.50 | 3.74    | 28.00 | 6.32    | 48.00 | 4.19    | 16.00 | 3.93    | 23.00 | 3.80    | 15.00  | 4.00                | 16.83 |       |
| Patient Days  | 91      |       | 87      | 45    | 71      | 28    | 139     | 96    | 88      | 48    | 59      | 23    | 57      | 30     | 68                  | 34    |       |
| Avg RIW   | 1.393   |       | 1.590   | 4.700 | 1.621   | 4.700 | 2.091   | 9.600 | 1.610   | 3.467 | 1.513   | 4.900 | 2.487   | 10.050 | 1.839               | 5.900 |       |
| Weighted Cases  | 39      |       | 32      | 9     | 31      | 5     | 46      | 19    | 34      | 10    | 23      | 5     | 37      | 20.1   | 31                  | 12    |       |

## Acute Cerebrovascular Syndrome

### Acute Care Inpatient Summary

Peace Arch District Hospital

|   | 2001/02 |       | 2002/03 |       | 2003/04 |       | 2004/05 |       | 2005/06 |       | 2006/07 |       | 2007/08 |       | Avg. 05/06 to 07/08 |       | % ER   |
|---|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------------------|-------|--------|
|   | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All                 | ER    |        |
| <b>Hemorrhagic Event of Central Nervous System (25)</b> |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |        |
| Cases   | 37      | 35    | 17      | 17    | 21      | 21    | 40      | 39    | 23      | 22    | 30      | 28    | 28      | 27    | 27                  | 26    | 95.1%  |
| ALOS  | 5.05    | 5.14  | 8.88    | 8.88  | 11.05   | 11.05 | 9.08    | 8.79  | 8.65    | 6.82  | 11.70   | 10.36 | 13.14   | 13.37 | 11.33               | 10.40 |        |
| Patient Days  | 187     | 180   | 151     | 151   | 232     | 232   | 363     | 343   | 199     | 150   | 351     | 290   | 368     | 361   | 306                 | 267   |        |
| Avg RIW   | 2.297   | 2.140 | 4.012   | 4.012 | 3.795   | 3.795 | 2.513   | 2.454 | 2.030   | 1.773 | 2.323   | 2.039 | 2.150   | 2.178 | 2.180               | 2.012 |        |
| Weighted Cases  | 85      | 75    | 68      | 68    | 80      | 80    | 101     | 96    | 47      | 39    | 70      | 57    | 60      | 59    | 59                  | 52    |        |
| <b>Ischemic Event of Central Nervous System (26)</b>    |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |        |
| Cases   | 79      | 78    | 78      | 76    | 92      | 91    | 45      | 42    | 76      | 69    | 75      | 71    | 54      | 50    | 68                  | 63    | 92.7%  |
| ALOS  | 13.00   | 12.73 | 14.42   | 14.64 | 13.38   | 13.51 | 11.89   | 11.79 | 23.49   | 23.48 | 18.56   | 18.46 | 21.80   | 22.20 | 21.24               | 21.27 |        |
| Patient Days  | 1,027   | 993   | 1,125   | 1,113 | 1,231   | 1,229 | 535     | 495   | 1,785   | 1,620 | 1,392   | 1,311 | 1,177   | 1,110 | 1,451               | 1,347 |        |
| Avg RIW   | 4.548   | 4.335 | 4.572   | 4.658 | 4.013   | 4.038 | 3.484   | 3.467 | 4.471   | 4.390 | 3.364   | 3.223 | 4.152   | 4.272 | 3.982               | 3.923 |        |
| Weighted Cases  | 359     | 338   | 357     | 354   | 369     | 368   | 157     | 146   | 340     | 303   | 252     | 229   | 224     | 214   | 272                 | 248   |        |
| <b>Cerebrovascular Disorder (27)</b>                    |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |        |
| Cases   | 9       | 8     | 7       | 7     | 9       | 5     | 5       | 3     | 8       | 8     | 3       | 3     | 5       | 5     | 5                   | 5     | 100.0% |
| ALOS  | 10.67   | 10.88 | 11.57   | 11.57 | 13.22   | 6.60  | 17.20   | 19.33 | 20.88   | 20.88 | 9.00    | 9.00  | 20.40   | 20.40 | 18.50               | 18.50 |        |
| Patient Days  | 96      | 87    | 81      | 81    | 119     | 33    | 86      | 58    | 167     | 167   | 27      | 27    | 102     | 102   | 99                  | 99    |        |
| Avg RIW   | 6.678   | 5.625 | 1.343   | 1.343 | 4.244   | 2.040 | 4.780   | 4.000 | 2.750   | 2.750 | 0.900   | 0.900 | 2.280   | 2.280 | 2.256               | 2.256 |        |
| Weighted Cases  | 60      | 45    | 9       | 9     | 38      | 10    | 24      | 12    | 22      | 22    | 3       | 3     | 11      | 11    | 12                  | 12    |        |
| <b>Unspecified Stroke (28)</b>                          |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |        |
| Cases   | 56      | 54    | 45      | 44    | 43      | 42    | 53      | 53    | 49      | 46    | 55      | 55    | 35      | 32    | 46                  | 44    | 95.7%  |
| ALOS  | 10.30   | 10.50 | 13.76   | 13.61 | 10.44   | 10.29 | 10.19   | 10.19 | 13.35   | 13.30 | 11.64   | 11.64 | 15.71   | 15.22 | 13.27               | 13.08 |        |
| Patient Days  | 577     | 567   | 619     | 599   | 449     | 432   | 540     | 540   | 654     | 612   | 640     | 640   | 550     | 487   | 615                 | 580   |        |
| Avg RIW   | 3.438   | 3.528 | 3.840   | 3.866 | 2.991   | 2.895 | 2.374   | 2.374 | 2.102   | 2.074 | 2.445   | 2.445 | 2.740   | 2.422 | 2.399               | 2.311 |        |
| Weighted Cases  | 193     | 191   | 173     | 170   | 129     | 122   | 126     | 126   | 103     | 95    | 135     | 135   | 96      | 78    | 111                 | 102   |        |
| <b>Transient Ischemic Attack (29)</b>                   |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |        |
| Cases   | 33      | 33    | 32      | 32    | 32      | 32    | 30      | 30    | 41      | 41    | 40      | 40    | 39      | 38    | 40                  | 40    | 99.2%  |
| ALOS  | 4.00    | 4.00  | 4.75    | 4.75  | 4.38    | 4.38  | 3.40    | 3.40  | 4.78    | 4.78  | 3.85    | 3.85  | 4.03    | 4.03  | 4.23                | 4.23  |        |
| Patient Days  | 132     | 132   | 152     | 152   | 140     | 140   | 102     | 102   | 196     | 196   | 154     | 154   | 157     | 153   | 169                 | 168   |        |
| Avg RIW   | 0.879   | 0.879 | 1.247   | 1.247 | 0.713   | 0.713 | 0.817   | 0.817 | 0.841   | 0.841 | 0.788   | 0.788 | 0.841   | 0.842 | 0.823               | 0.824 |        |
| Weighted Cases  | 29      | 29    | 40      | 40    | 23      | 23    | 25      | 25    | 35      | 35    | 32      | 32    | 33      | 32    | 33                  | 33    |        |
| <b>Total</b>  |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |        |
| Cases   | 214     | 208   | 179     | 176   | 197     | 191   | 173     | 167   | 197     | 186   | 203     | 197   | 161     | 152   | 187                 | 178   | 95.4%  |
| ALOS  | 9.43    | 9.42  | 11.89   | 11.91 | 11.02   | 10.82 | 9.40    | 9.21  | 15.23   | 14.76 | 12.63   | 12.29 | 14.62   | 14.56 | 14.12               | 13.79 |        |
| Patient Days  | 2,019   | 1,959 | 2,128   | 2,096 | 2,171   | 2,066 | 1,626   | 1,538 | 3,001   | 2,745 | 2,564   | 2,422 | 2,354   | 2,213 | 2,640               | 2,460 |        |
| Avg RIW   | 3.392   | 3.257 | 3.614   | 3.645 | 3.241   | 3.151 | 2.494   | 2.417 | 2.772   | 2.655 | 2.417   | 2.308 | 2.637   | 2.588 | 2.605               | 2.508 |        |
| Weighted Cases  | 726     | 678   | 647     | 642   | 639     | 602   | 432     | 404   | 546     | 494   | 491     | 455   | 425     | 393   | 487                 | 447   |        |

## Acute Cerebrovascular Syndrome

### Acute Care Inpatient Summary

Royal Columbian Hospital

|   | 2001/02      |              | 2002/03      |              | 2003/04      |              | 2004/05      |              | 2005/06      |              | 2006/07      |              | 2007/08      |              | Avg. 05/06 to 07/08 |              | % ER  |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------------|--------------|-------|
|   | All          | ER           | All          | ER           | All          | ER           | All          | ER           | All          | ER           | All          | ER           | All          | ER           |                     |              |       |
| <b>Hemorrhagic Event of Central Nervous System (25)</b> |              |              |              |              |              |              |              |              |              |              |              |              |              |              |                     |              |       |
| Cases   | 53           | 44           | 59           | 39           | 63           | 37           | 57           | 42           | 62           | 39           | 86           | 60           | 69           | 46           | <b>72</b>           | <b>48</b>    | 66.8% |
| ALOS  | 9.60         | 8.75         | 6.54         | 7.28         | 9.41         | 8.65         | 7.28         | 7.67         | 14.24        | 16.92        | 9.59         | 9.62         | 13.72        | 16.87        | <b>12.24</b>        | <b>13.88</b> |       |
| Patient Days  | 509          | 385          | 386          | 284          | 593          | 320          | 415          | 322          | 883          | 660          | 825          | 577          | 947          | 776          | <b>885</b>          | <b>671</b>   |       |
| Avg RIW   | 3.377        | 3.216        | 2.375        | 2.962        | 2.551        | 2.686        | 1.509        | 1.533        | 3.913        | 4.949        | 2.302        | 2.155        | 2.681        | 3.107        | <b>2.883</b>        | <b>3.208</b> |       |
| Weighted Cases  | 179          | 142          | 140          | 116          | 161          | 99           | 86           | 64           | 243          | 193          | 198          | 129          | 185          | 143          | <b>209</b>          | <b>155</b>   |       |
| <b>Ischemic Event of Central Nervous System (26)</b>    |              |              |              |              |              |              |              |              |              |              |              |              |              |              |                     |              |       |
| Cases   | 91           | 85           | 92           | 83           | 78           | 66           | 113          | 106          | 96           | 88           | 109          | 103          | 103          | 99           | <b>103</b>          | <b>97</b>    | 94.2% |
| ALOS  | 11.70        | 12.02        | 12.04        | 12.60        | 13.85        | 12.94        | 13.38        | 13.77        | 16.38        | 17.00        | 20.10        | 21.02        | 13.98        | 13.79        | <b>16.89</b>        | <b>17.33</b> |       |
| Patient Days  | 1,065        | 1,022        | 1,108        | 1,046        | 1,080        | 854          | 1,512        | 1,460        | 1,572        | 1,496        | 2,191        | 2,165        | 1,440        | 1,365        | <b>1,734</b>        | <b>1,675</b> |       |
| Avg RIW   | 3.064        | 3.009        | 2.864        | 3.010        | 3.181        | 3.077        | 3.040        | 3.121        | 3.176        | 3.298        | 3.788        | 3.924        | 2.751        | 2.678        | <b>3.251</b>        | <b>3.309</b> |       |
| Weighted Cases  | 279          | 256          | 264          | 250          | 248          | 203          | 344          | 331          | 305          | 290          | 413          | 404          | 283          | 265          | <b>334</b>          | <b>320</b>   |       |
| <b>Cerebrovascular Disorder (27)</b>                    |              |              |              |              |              |              |              |              |              |              |              |              |              |              |                     |              |       |
| Cases   | 33           | 9            | 37           | 7            | 28           | 4            | 29           | 7            | 33           | 12           | 16           | 4            | 22           | 9            | <b>24</b>           | <b>8</b>     | 35.2% |
| ALOS  | 4.03         | 6.89         | 2.78         | 9.43         | 7.32         | 18.75        | 5.17         | 5.86         | 4.82         | 10.00        | 5.13         | 4.50         | 9.50         | 17.00        | <b>6.34</b>         | <b>11.64</b> |       |
| Patient Days  | 133          | 62           | 103          | 66           | 205          | 75           | 150          | 41           | 159          | 120          | 82           | 18           | 209          | 153          | <b>150</b>          | <b>97</b>    |       |
| Avg RIW   | 1.655        | 2.667        | 1.062        | 1.514        | 1.814        | 2.725        | 3.793        | 1.414        | 1.248        | 1.642        | 1.331        | 1.050        | 1.959        | 3.056        | <b>1.487</b>        | <b>2.056</b> |       |
| Weighted Cases  | 55           | 24           | 39           | 11           | 51           | 11           | 110          | 10           | 41           | 20           | 21           | 4            | 43           | 28           | <b>35</b>           | <b>17</b>    |       |
| <b>Unspecified Stroke (28)</b>                          |              |              |              |              |              |              |              |              |              |              |              |              |              |              |                     |              |       |
| Cases   | 83           | 78           | 90           | 83           | 77           | 69           | 72           | 69           | 63           | 59           | 62           | 55           | 60           | 59           | <b>62</b>           | <b>58</b>    | 93.5% |
| ALOS  | 9.00         | 8.64         | 9.04         | 8.69         | 12.13        | 11.78        | 11.92        | 12.16        | 9.79         | 9.64         | 12.37        | 10.49        | 9.32         | 9.41         | <b>10.50</b>        | <b>9.83</b>  |       |
| Patient Days  | 747          | 674          | 814          | 721          | 934          | 813          | 858          | 839          | 617          | 569          | 767          | 577          | 559          | 555          | <b>648</b>          | <b>567</b>   |       |
| Avg RIW   | 3.073        | 2.403        | 2.221        | 2.081        | 2.160        | 2.000        | 2.164        | 2.204        | 1.846        | 1.800        | 3.534        | 2.227        | 1.523        | 1.536        | <b>2.307</b>        | <b>1.846</b> |       |
| Weighted Cases  | 255          | 187          | 200          | 173          | 166          | 138          | 156          | 152          | 116          | 106          | 219          | 123          | 91           | 91           | <b>142</b>          | <b>106</b>   |       |
| <b>Transient Ischemic Attack (29)</b>                   |              |              |              |              |              |              |              |              |              |              |              |              |              |              |                     |              |       |
| Cases   | 30           | 27           | 34           | 30           | 34           | 32           | 26           | 26           | 38           | 37           | 32           | 32           | 38           | 37           | <b>36</b>           | <b>35</b>    | 98.1% |
| ALOS  | 2.33         | 2.37         | 4.59         | 3.97         | 3.12         | 2.84         | 2.92         | 2.92         | 5.34         | 5.32         | 5.13         | 5.13         | 6.32         | 6.41         | <b>5.62</b>         | <b>5.64</b>  |       |
| Patient Days  | 70           | 64           | 156          | 119          | 106          | 91           | 76           | 76           | 203          | 197          | 164          | 164          | 240          | 237          | <b>202</b>          | <b>199</b>   |       |
| Avg RIW   | 0.550        | 0.541        | 0.997        | 0.817        | 0.626        | 0.600        | 0.615        | 0.615        | 0.842        | 0.832        | 0.794        | 0.794        | 1.100        | 1.111        | <b>0.919</b>        | <b>0.918</b> |       |
| Weighted Cases  | 17           | 15           | 34           | 25           | 21           | 19           | 16           | 16           | 32           | 31           | 25           | 25           | 42           | 41           | <b>33</b>           | <b>32</b>    |       |
| <b>Total</b>  |              |              |              |              |              |              |              |              |              |              |              |              |              |              |                     |              |       |
| Cases   | <b>290</b>   | <b>243</b>   | <b>312</b>   | <b>242</b>   | <b>280</b>   | <b>208</b>   | <b>297</b>   | <b>250</b>   | <b>292</b>   | <b>235</b>   | <b>305</b>   | <b>254</b>   | <b>292</b>   | <b>250</b>   | <b>296</b>          | <b>246</b>   | 83.1% |
| ALOS  | <b>8.70</b>  | <b>9.08</b>  | <b>8.23</b>  | <b>9.24</b>  | <b>10.42</b> | <b>10.35</b> | <b>10.14</b> | <b>10.95</b> | <b>11.76</b> | <b>12.94</b> | <b>13.21</b> | <b>13.78</b> | <b>11.63</b> | <b>12.34</b> | <b>12.21</b>        | <b>13.03</b> |       |
| Patient Days  | <b>2,524</b> | <b>2,207</b> | <b>2,567</b> | <b>2,236</b> | <b>2,918</b> | <b>2,153</b> | <b>3,011</b> | <b>2,738</b> | <b>3,434</b> | <b>3,042</b> | <b>4,029</b> | <b>3,501</b> | <b>3,395</b> | <b>3,086</b> | <b>3,619</b>        | <b>3,210</b> |       |
| Avg RIW   | <b>2.703</b> | <b>2.565</b> | <b>2.169</b> | <b>2.368</b> | <b>2.311</b> | <b>2.263</b> | <b>2.395</b> | <b>2.293</b> | <b>2.524</b> | <b>2.723</b> | <b>2.874</b> | <b>2.699</b> | <b>2.208</b> | <b>2.269</b> | <b>2.540</b>        | <b>2.561</b> |       |
| Weighted Cases  | <b>784</b>   | <b>623</b>   | <b>677</b>   | <b>573</b>   | <b>647</b>   | <b>471</b>   | <b>711</b>   | <b>573</b>   | <b>737</b>   | <b>640</b>   | <b>877</b>   | <b>686</b>   | <b>645</b>   | <b>567</b>   | <b>753</b>          | <b>631</b>   |       |

## Acute Cerebrovascular Syndrome

### Acute Care Inpatient Summary

Royal Jubilee Hospital

|   | 2001/02 |       | 2002/03 |       | 2003/04 |       | 2004/05 |       | 2005/06 |       | 2006/07 |       | 2007/08 |       | Avg. 05/06 to 07/08 |       | % ER  |
|---|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------------------|-------|-------|
|   | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    |                     |       |       |
| <b>Hemorrhagic Event of Central Nervous System (25)</b> |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 10      | 8     | 10      | 9     | 18      | 17    | 15      | 15    | 15      | 15    | 12      | 11    | 6       | 5     | 11                  | 10    | 93.9% |
| ALOS  | 8.80    | 10.75 | 1.40    | 1.33  | 4.44    | 4.41  | 20.33   | 20.33 | 7.13    | 7.13  | 3.67    | 3.91  | 15.00   | 17.80 | 7.30                | 7.71  |       |
| Patient Days  | 88      | 86    | 14      | 12    | 80      | 75    | 305     | 305   | 107     | 107   | 44      | 43    | 90      | 89    | 80                  | 80    |       |
| Avg RIW   | 2.890   | 3.488 | 0.640   | 0.656 | 2.539   | 2.606 | 6.367   | 6.367 | 1.953   | 1.953 | 1.483   | 1.573 | 5.050   | 6.000 | 2.345               | 2.471 |       |
| Weighted Cases  | 29      | 28    | 6       | 6     | 46      | 44    | 96      | 96    | 29      | 29    | 18      | 17    | 30      | 30    | 26                  | 26    |       |
| <b>Ischemic Event of Central Nervous System (26)</b>    |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 39      | 35    | 31      | 24    | 33      | 29    | 48      | 40    | 41      | 34    | 27      | 26    | 22      | 21    | 30                  | 27    | 90.0% |
| ALOS  | 15.10   | 13.60 | 10.77   | 10.25 | 16.06   | 17.28 | 14.15   | 14.73 | 8.59    | 8.88  | 9.78    | 10.00 | 16.86   | 17.00 | 10.97               | 11.35 |       |
| Patient Days  | 589     | 476   | 334     | 246   | 530     | 501   | 679     | 589   | 352     | 302   | 264     | 260   | 371     | 357   | 329                 | 306   |       |
| Avg RIW   | 4.372   | 4.346 | 5.665   | 3.996 | 5.006   | 5.176 | 5.033   | 4.723 | 3.827   | 4.262 | 2.207   | 2.142 | 4.009   | 3.986 | 3.386               | 3.510 |       |
| Weighted Cases  | 171     | 152   | 176     | 96    | 165     | 150   | 242     | 189   | 157     | 145   | 60      | 56    | 88      | 84    | 102                 | 95    |       |
| <b>Cerebrovascular Disorder (27)</b>                    |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 13      | 7     | 13      | 8     | 8       | 5     | 6       | 3     | 4       | 2     | 4       | 2     | 10      | 4     | 6                   | 3     | 44.4% |
| ALOS  | 6.69    | 11.57 | 3.77    | 5.50  | 5.88    | 8.80  | 4.83    | 4.33  | 10.50   | 15.00 | 10.75   | 20.00 | 6.20    | 8.25  | 8.17                | 12.88 |       |
| Patient Days  | 87      | 81    | 49      | 44    | 47      | 44    | 29      | 13    | 42      | 30    | 43      | 40    | 62      | 33    | 49                  | 34    |       |
| Avg RIW   | 1.938   | 2.800 | 1.215   | 1.300 | 1.400   | 1.580 | 1.283   | 1.200 | 1.300   | 1.150 | 1.775   | 2.450 | 1.390   | 1.375 | 1.456               | 1.588 |       |
| Weighted Cases  | 25      | 20    | 16      | 10    | 11      | 8     | 8       | 4     | 5       | 2     | 7       | 5     | 14      | 6     | 9                   | 4     |       |
| <b>Unspecified Stroke (28)</b>                          |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 30      | 30    | 47      | 46    | 34      | 33    | 35      | 34    | 31      | 30    | 32      | 30    | 22      | 20    | 28                  | 27    | 94.1% |
| ALOS  | 6.83    | 6.83  | 16.53   | 16.78 | 12.32   | 12.52 | 11.20   | 11.32 | 11.97   | 12.10 | 8.97    | 9.43  | 12.55   | 13.10 | 10.99               | 11.35 |       |
| Patient Days  | 205     | 205   | 777     | 772   | 419     | 413   | 392     | 385   | 371     | 363   | 287     | 283   | 276     | 262   | 311                 | 303   |       |
| Avg RIW   | 2.453   | 2.453 | 4.055   | 4.120 | 5.815   | 5.936 | 2.743   | 2.791 | 3.381   | 3.457 | 1.741   | 1.827 | 2.355   | 2.320 | 2.498               | 2.561 |       |
| Weighted Cases  | 74      | 74    | 191     | 190   | 198     | 196   | 96      | 95    | 105     | 104   | 56      | 55    | 52      | 46    | 71                  | 68    |       |
| <b>Transient Ischemic Attack (29)</b>                   |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 38      | 38    | 39      | 36    | 32      | 31    | 39      | 39    | 37      | 33    | 22      | 22    | 13      | 12    | 24                  | 22    | 93.1% |
| ALOS  | 4.24    | 4.24  | 3.13    | 3.11  | 2.31    | 2.29  | 2.18    | 2.18  | 2.27    | 2.33  | 2.27    | 2.27  | 2.31    | 2.42  | 2.28                | 2.33  |       |
| Patient Days  | 161     | 161   | 122     | 112   | 74      | 71    | 85      | 85    | 84      | 77    | 50      | 50    | 30      | 29    | 55                  | 52    |       |
| Avg RIW   | 1.321   | 1.321 | 0.644   | 0.642 | 0.894   | 0.887 | 0.605   | 0.605 | 0.595   | 0.597 | 0.677   | 0.677 | 0.585   | 0.617 | 0.618               | 0.627 |       |
| Weighted Cases  | 50      | 50    | 25      | 23    | 29      | 28    | 24      | 24    | 22      | 20    | 15      | 15    | 8       | 7     | 15                  | 14    |       |
| <b>Total</b>  |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 130     | 118   | 140     | 123   | 125     | 115   | 143     | 131   | 128     | 114   | 97      | 91    | 73      | 62    | 99                  | 89    | 89.6% |
| ALOS  | 8.69    | 8.55  | 9.26    | 9.64  | 9.20    | 9.60  | 10.42   | 10.51 | 7.47    | 7.71  | 7.09    | 7.43  | 11.36   | 12.42 | 8.30                | 8.71  |       |
| Patient Days  | 1,130   | 1,009 | 1,296   | 1,186 | 1,150   | 1,104 | 1,490   | 1,377 | 956     | 879   | 688     | 676   | 829     | 770   | 824                 | 775   |       |
| Avg RIW   | 2.680   | 2.741 | 2.954   | 2.641 | 3.587   | 3.702 | 3.248   | 3.103 | 2.486   | 2.631 | 1.599   | 1.622 | 2.627   | 2.790 | 2.232               | 2.324 |       |
| Weighted Cases  | 348     | 323   | 414     | 325   | 448     | 426   | 464     | 407   | 318     | 300   | 155     | 148   | 192     | 173   | 222                 | 207   |       |

## Acute Cerebrovascular Syndrome

### Acute Care Inpatient Summary

Cowichan District Hospital

|   | 2001/02 |       | 2002/03 |       | 2003/04 |       | 2004/05 |       | 2005/06 |       | 2006/07 |         | 2007/08 |       | Avg. 05/06 to 07/08 |       | % ER   |
|---|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|---------|---------|-------|---------------------|-------|--------|
|   | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER      | All     | ER    | All                 | ER    |        |
| <b>Hemorrhagic Event of Central Nervous System (25)</b> |         |       |         |       |         |       |         |       |         |       |         |         |         |       |                     |       |        |
| Cases   | 12      | 11    | 12      | 12    | 14      | 14    | 14      | 11    | 13      | 12    | 9       | 9       | 19      | 18    | 14                  | 13    | 95.1%  |
| ALOS  | 2.67    | 2.82  | 3.25    | 3.25  | 4.79    | 4.79  | 10.14   | 9.09  | 6.08    | 6.50  | 16.67   | 16.67   | 7.84    | 8.17  | 9.22                | 9.62  |        |
| Patient Days  | 32      | 31    | 39      | 39    | 67      | 67    | 142     | 100   | 79      | 78    | 150     | 150     | 149     | 147   | 126                 | 125   |        |
| Avg RIW   | 0.658   | 0.700 | 0.600   | 0.600 | 0.957   | 0.957 | 2.393   | 2.345 | 1.677   | 1.792 | 4.333   | 4.333   | 2.053   | 2.139 | 2.434               | 2.538 |        |
| Weighted Cases  | 8       | 8     | 7       | 7     | 13      | 13    | 34      | 26    | 22      | 22    | 39      | 39      | 39      | 39    | 33                  | 33    |        |
| <b>Ischemic Event of Central Nervous System (26)</b>    |         |       |         |       |         |       |         |       |         |       |         |         |         |       |                     |       |        |
| Cases   | 29      | 28    | 36      | 35    | 21      | 19    | 21      | 17    | 25      | 21    | 22      | 22      | 21      | 21    | 23                  | 21    | 94.1%  |
| ALOS  | 15.10   | 14.82 | 14.06   | 13.94 | 15.48   | 15.21 | 13.86   | 14.88 | 11.48   | 9.10  | 17.27   | 17.27   | 10.57   | 10.57 | 13.07               | 12.39 |        |
| Patient Days  | 438     | 415   | 506     | 488   | 325     | 289   | 291     | 253   | 287     | 191   | 380     | 380     | 222     | 222   | 296                 | 264   |        |
| Avg RIW   | 3.655   | 3.629 | 2.992   | 3.000 | 2.605   | 2.568 | 2.576   | 2.818 | 3.440   | 2.995 | 5.386   | 5.386   | 3.090   | 3.090 | 3.962               | 3.848 |        |
| Weighted Cases  | 106     | 102   | 108     | 105   | 55      | 49    | 54      | 48    | 86      | 63    | 119     | 119     | 65      | 65    | 90                  | 82    |        |
| <b>Cerebrovascular Disorder (27)</b>                    |         |       |         |       |         |       |         |       |         |       |         |         |         |       |                     |       |        |
| Cases   | 4       | 4     | 3       | 3     | 4       | 4     | 7       | 5     | 8       | 8     | 3       | 3       | 2       | 2     | 4                   | 4     | 100.0% |
| ALOS  | 2.75    | 2.75  | 3.00    | 3.00  | 16.00   | 16.00 | 4.29    | 2.20  | 12.75   | 12.75 | 19.00   | 19.00   | 7.50    | 7.50  | 13.38               | 13.38 |        |
| Patient Days  | 11      | 11    | 9       | 9     | 64      | 64    | 30      | 11    | 102     | 102   | 57      | 57      | 15      | 15    | 58                  | 58    |        |
| Avg RIW   | 0.875   | 0.875 | 1.067   | 1.067 | 4.100   | 4.100 | 1.071   | 0.740 | 3.413   | 3.413 | 7.367   | 7.367   | 2.400   | 2.400 | 4.169               | 4.169 |        |
| Weighted Cases  | 4       | 4     | 3       | 3     | 16      | 16    | 8       | 4     | 27      | 27    | 22      | 22      | 5       | 5     | 18                  | 18    |        |
| <b>Unspecified Stroke (28)</b>                          |         |       |         |       |         |       |         |       |         |       |         |         |         |       |                     |       |        |
| Cases   | 61      | 59    | 40      | 39    | 33      | 30    | 54      | 49    | 34      | 32    | 47      | 44      | 50      | 47    | 44                  | 41    | 93.9%  |
| ALOS  | 10.13   | 10.00 | 9.90    | 10.10 | 10.39   | 10.37 | 9.00    | 8.69  | 11.68   | 11.84 | 13.47   | 623.00  | 9.32    | 6.21  | 11.42               | 10.52 |        |
| Patient Days  | 618     | 590   | 396     | 394   | 343     | 311   | 486     | 426   | 397     | 379   | 633     | 623     | 466     | 292   | 499                 | 431   |        |
| Avg RIW   | 1.915   | 1.944 | 1.523   | 1.551 | 2.170   | 2.153 | 2.106   | 2.067 | 2.756   | 2.813 | 3.751   | 138.600 | 2.188   | 1.821 | 2.896               | 2.554 |        |
| Weighted Cases  | 117     | 115   | 61      | 61    | 72      | 65    | 114     | 101   | 94      | 90    | 176     | 139     | 109     | 86    | 126                 | 105   |        |
| <b>Transient Ischemic Attack (29)</b>                   |         |       |         |       |         |       |         |       |         |       |         |         |         |       |                     |       |        |
| Cases   | 18      | 18    | 26      | 26    | 26      | 26    | 20      | 20    | 17      | 17    | 12      | 12      | 17      | 17    | 15                  | 15    | 100.0% |
| ALOS  | 3.50    | 3.50  | 4.58    | 4.58  | 3.54    | 3.54  | 2.60    | 2.60  | 4.71    | 4.71  | 5.75    | 5.75    | 5.00    | 5.00  | 5.09                | 5.09  |        |
| Patient Days  | 63      | 63    | 119     | 119   | 92      | 92    | 52      | 52    | 80      | 80    | 69      | 69      | 85      | 85    | 78                  | 78    |        |
| Avg RIW   | 0.583   | 0.583 | 0.950   | 0.950 | 0.638   | 0.638 | 0.555   | 0.555 | 0.900   | 0.900 | 1.458   | 1.458   | 1.159   | 1.159 | 1.141               | 1.141 |        |
| Weighted Cases  | 11      | 11    | 25      | 25    | 17      | 17    | 11      | 11    | 15      | 15    | 18      | 18      | 20      | 20    | 18                  | 18    |        |
| <b>Total</b>  |         |       |         |       |         |       |         |       |         |       |         |         |         |       |                     |       |        |
| Cases   | 124     | 120   | 117     | 115   | 98      | 93    | 116     | 102   | 97      | 90    | 93      | 90      | 109     | 105   | 100                 | 95    | 95.3%  |
| ALOS  | 9.37    | 9.25  | 9.14    | 9.12  | 9.09    | 8.85  | 8.63    | 8.25  | 9.74    | 9.22  | 13.86   | 14.21   | 8.60    | 7.25  | 10.61               | 10.07 |        |
| Patient Days  | 1,162   | 1,110 | 1,069   | 1,049 | 891     | 823   | 1,001   | 842   | 945     | 830   | 1,289   | 1,279   | 937     | 761   | 1,057               | 957   |        |
| Avg RIW   | 1.973   | 1.983 | 1.741   | 1.744 | 1.762   | 1.718 | 1.896   | 1.861 | 2.516   | 2.411 | 4.015   | 3.730   | 2.182   | 2.033 | 2.861               | 2.688 |        |
| Weighted Cases  | 245     | 238   | 204     | 201   | 173     | 160   | 220     | 190   | 244     | 217   | 373     | 336     | 238     | 214   | 285                 | 255   |        |

## Acute Cerebrovascular Syndrome

### Acute Care Inpatient Summary

Nanaimo Regional General Hospital

|   | 2001/02 |       | 2002/03 |       | 2003/04 |       | 2004/05 |       | 2005/06 |       | 2006/07 |       | 2007/08 |       | Avg. 05/06 to 07/08 |       | % ER  |
|---|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------------------|-------|-------|
|   | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All                 | ER    |       |
| <b>Hemorrhagic Event of Central Nervous System (25)</b> |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 59      | 54    | 36      | 33    | 35      | 32    | 41      | 38    | 32      | 29    | 41      | 37    | 24      | 21    | 32                  | 29    | 89.7% |
| ALOS  | 6.88    | 4.94  | 9.81    | 9.18  | 4.66    | 4.44  | 7.41    | 7.61  | 7.19    | 6.07  | 8.95    | 8.19  | 11.21   | 9.14  | 8.93                | 7.71  |       |
| Patient Days  | 406     | 267   | 353     | 303   | 163     | 142   | 304     | 289   | 230     | 176   | 367     | 303   | 269     | 192   | 289                 | 224   |       |
| Avg RIW   | 1.261   | 0.924 | 2.019   | 1.924 | 1.260   | 1.238 | 2.473   | 2.437 | 1.494   | 1.138 | 1.717   | 1.570 | 4.321   | 1.619 | 2.288               | 1.438 |       |
| Weighted Cases  | 74      | 50    | 73      | 64    | 44      | 40    | 101     | 93    | 48      | 33    | 70      | 58    | 104     | 34    | 74                  | 42    |       |
| <b>Ischemic Event of Central Nervous System (26)</b>    |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 69      | 65    | 56      | 55    | 47      | 46    | 53      | 50    | 52      | 50    | 57      | 57    | 71      | 71    | 60                  | 59    | 98.9% |
| ALOS  | 13.06   | 12.46 | 12.09   | 12.13 | 13.66   | 13.87 | 10.17   | 10.42 | 13.63   | 12.56 | 10.96   | 10.96 | 13.89   | 13.89 | 12.89               | 12.58 |       |
| Patient Days  | 901     | 810   | 677     | 667   | 642     | 638   | 539     | 521   | 709     | 628   | 625     | 625   | 986     | 986   | 773                 | 746   |       |
| Avg RIW   | 2.368   | 2.335 | 2.384   | 2.375 | 3.028   | 3.074 | 1.972   | 1.984 | 2.577   | 2.418 | 2.039   | 2.039 | 3.956   | 3.956 | 2.951               | 2.910 |       |
| Weighted Cases  | 163     | 152   | 134     | 131   | 142     | 141   | 105     | 99    | 134     | 121   | 116     | 116   | 281     | 281   | 177                 | 173   |       |
| <b>Cerebrovascular Disorder (27)</b>                    |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 8       | 8     | 16      | 15    | 9       | 8     | 7       | 7     | 16      | 15    | 20      | 18    | 2       | 1     | 13                  | 11    | 89.5% |
| ALOS  | 3.13    | 3.13  | 9.44    | 8.33  | 5.56    | 6.00  | 7.43    | 7.43  | 20.75   | 20.27 | 7.65    | 7.39  | 6.50    | 8.00  | 13.11               | 13.09 |       |
| Patient Days  | 25      | 25    | 151     | 125   | 50      | 48    | 52      | 52    | 332     | 304   | 153     | 133   | 13      | 8     | 166                 | 148   |       |
| Avg RIW   | 0.813   | 0.813 | 1.331   | 1.067 | 0.922   | 0.900 | 1.414   | 1.414 | 4.150   | 3.933 | 1.845   | 1.389 | 1.200   | 1.400 | 2.782               | 2.512 |       |
| Weighted Cases  | 7       | 7     | 21      | 16    | 8       | 7     | 10      | 10    | 66      | 59    | 37      | 25    | 2       | 1     | 35                  | 28    |       |
| <b>Unspecified Stroke (28)</b>                          |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 66      | 62    | 48      | 48    | 76      | 72    | 82      | 79    | 77      | 76    | 63      | 62    | 42      | 41    | 61                  | 60    | 98.4% |
| ALOS  | 11.59   | 10.21 | 12.56   | 12.56 | 11.64   | 11.29 | 9.49    | 9.34  | 7.57    | 7.57  | 8.95    | 8.58  | 8.43    | 8.07  | 8.25                | 8.03  |       |
| Patient Days  | 765     | 633   | 603     | 603   | 885     | 813   | 778     | 738   | 583     | 575   | 564     | 532   | 354     | 331   | 500                 | 479   |       |
| Avg RIW   | 1.683   | 1.479 | 2.342   | 2.342 | 1.805   | 1.756 | 1.482   | 1.475 | 1.553   | 1.557 | 1.610   | 1.560 | 2.431   | 2.415 | 1.775               | 1.754 |       |
| Weighted Cases  | 111     | 92    | 112     | 112   | 137     | 126   | 122     | 117   | 120     | 118   | 101     | 97    | 102     | 99    | 108                 | 105   |       |
| <b>Transient Ischemic Attack (29)</b>                   |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 44      | 43    | 43      | 43    | 55      | 53    | 73      | 73    | 53      | 52    | 42      | 41    | 50      | 50    | 48                  | 48    | 98.6% |
| ALOS  | 4.39    | 4.47  | 4.49    | 4.49  | 4.04    | 4.08  | 2.85    | 2.85  | 3.85    | 3.87  | 3.86    | 3.90  | 4.20    | 4.20  | 3.97                | 3.99  |       |
| Patient Days  | 193     | 192   | 193     | 193   | 222     | 216   | 208     | 208   | 204     | 201   | 162     | 160   | 210     | 210   | 192                 | 190   |       |
| Avg RIW   | 0.650   | 0.653 | 0.777   | 0.777 | 0.715   | 0.726 | 0.607   | 0.607 | 0.606   | 0.608 | 0.650   | 0.654 | 0.728   | 0.728 | 0.661               | 0.663 |       |
| Weighted Cases  | 29      | 28    | 33      | 33    | 39      | 39    | 44      | 44    | 32      | 32    | 27      | 27    | 36      | 36    | 32                  | 32    |       |
| <b>Total</b>  |         |       |         |       |         |       |         |       |         |       |         |       |         |       |                     |       |       |
| Cases   | 246     | 232   | 199     | 194   | 222     | 211   | 256     | 247   | 230     | 222   | 223     | 215   | 189     | 184   | 214                 | 207   | 96.7% |
| ALOS  | 9.31    | 8.31  | 9.93    | 9.75  | 8.84    | 8.80  | 7.35    | 7.32  | 8.95    | 8.49  | 8.39    | 8.15  | 9.69    | 9.39  | 8.97                | 8.64  |       |
| Patient Days  | 2,290   | 1,927 | 1,977   | 1,891 | 1,962   | 1,857 | 1,881   | 1,808 | 2,058   | 1,884 | 1,871   | 1,753 | 1,832   | 1,727 | 1,920               | 1,788 |       |
| Avg RIW   | 1.561   | 1.414 | 1.876   | 1.835 | 1.672   | 1.673 | 1.491   | 1.468 | 1.739   | 1.634 | 1.579   | 1.501 | 2.780   | 2.455 | 1.990               | 1.831 |       |
| Weighted Cases  | 384     | 328   | 373     | 356   | 371     | 353   | 382     | 363   | 400     | 363   | 352     | 323   | 526     | 452   | 426                 | 379   |       |

## Acute Cerebrovascular Syndrome

### Acute Care Inpatient Summary

St. Joseph's General Hospital

|   | 2001/02 |        | 2002/03 |       | 2003/04 |        | 2004/05 |       | 2005/06 |       | 2006/07 |       | 2007/08 |       | Avg. 05/06 to 07/08 |       | % ER   |
|---|---------|--------|---------|-------|---------|--------|---------|-------|---------|-------|---------|-------|---------|-------|---------------------|-------|--------|
|   | All     | ER     | All     | ER    | All     | ER     | All     | ER    | All     | ER    | All     | ER    | All     | ER    | All                 | ER    |        |
| <b>Hemorrhagic Event of Central Nervous System (25)</b> |         |        |         |       |         |        |         |       |         |       |         |       |         |       |                     |       |        |
| Cases   | 20      | 20     | 17      | 16    | 12      | 12     | 17      | 16    | 24      | 23    | 13      | 13    | 17      | 17    | 18                  | 18    | 98.1%  |
| ALOS  | 5.35    | 5.35   | 4.59    | 4.81  | 5.25    | 5.25   | 8.88    | 9.38  | 6.58    | 6.70  | 2.77    | 2.77  | 3.82    | 3.82  | 4.80                | 4.81  |        |
| Patient Days  | 107     | 107    | 78      | 77    | 63      | 63     | 151     | 150   | 158     | 154   | 36      | 36    | 65      | 65    | 86                  | 85    |        |
| Avg RIW   | 0.985   | 0.985  | 3.247   | 3.413 | 0.967   | 0.967  | 2.029   | 2.138 | 1.554   | 1.574 | 0.777   | 0.777 | 0.971   | 0.971 | 1.183               | 1.185 |        |
| Weighted Cases  | 20      | 20     | 55      | 55    | 12      | 12     | 35      | 34    | 37      | 36    | 10      | 10    | 17      | 17    | 21                  | 21    |        |
| <b>Ischemic Event of Central Nervous System (26)</b>    |         |        |         |       |         |        |         |       |         |       |         |       |         |       |                     |       |        |
| Cases   | 12      | 11     | 18      | 17    | 23      | 20     | 21      | 20    | 29      | 29    | 27      | 26    | 31      | 30    | 29                  | 28    | 97.7%  |
| ALOS  | 11.50   | 12.18  | 13.50   | 14.06 | 14.00   | 14.05  | 15.29   | 15.10 | 15.66   | 15.66 | 10.33   | 10.58 | 12.74   | 12.90 | 12.97               | 13.13 |        |
| Patient Days  | 138     | 134    | 243     | 239   | 322     | 281    | 321     | 302   | 454     | 454   | 279     | 275   | 395     | 387   | 376                 | 372   |        |
| Avg RIW   | 1.708   | 1.782  | 4.772   | 4.976 | 3.096   | 3.005  | 4.519   | 4.570 | 2.886   | 2.886 | 2.178   | 2.219 | 4.958   | 5.073 | 3.405               | 3.454 |        |
| Weighted Cases  | 21      | 20     | 86      | 85    | 71      | 60     | 95      | 91    | 84      | 84    | 59      | 58    | 154     | 152   | 99                  | 98    |        |
| <b>Cerebrovascular Disorder (27)</b>                    |         |        |         |       |         |        |         |       |         |       |         |       |         |       |                     |       |        |
| Cases   | 11      | 5      | 4       | 2     | 5       | 4      | 6       | 5     | 2       | 2     | 3       | 3     | 3       | 3     | 3                   | 3     | 100.0% |
| ALOS  | 21.64   | 14.00  | 17.75   | 4.00  | 31.00   | 22.75  | 20.33   | 24.20 | 1.00    | 1.00  | 7.67    | 7.67  | 8.00    | 8.00  | 6.13                | 6.13  |        |
| Patient Days  | 238     | 70     | 71      | 8     | 155     | 91     | 122     | 121   | 2       | 2     | 23      | 23    | 24      | 24    | 16                  | 16    |        |
| Avg RIW   | 11.991  | 10.640 | 3.975   | 1.050 | 15.520  | 16.000 | 3.867   | 4.460 | 1.000   | 1.000 | 1.400   | 1.400 | 1.000   | 1.000 | 1.150               | 1.150 |        |
| Weighted Cases  | 132     | 53     | 16      | 2     | 78      | 64     | 23      | 22    | 2       | 2     | 4       | 4     | 3       | 3     | 3                   | 3     |        |
| <b>Unspecified Stroke (28)</b>                          |         |        |         |       |         |        |         |       |         |       |         |       |         |       |                     |       |        |
| Cases   | 48      | 41     | 35      | 31    | 34      | 31     | 31      | 28    | 28      | 26    | 26      | 25    | 21      | 21    | 25                  | 24    | 96.0%  |
| ALOS  | 13.92   | 13.22  | 13.89   | 13.74 | 14.00   | 13.35  | 11.10   | 11.61 | 11.36   | 10.54 | 9.50    | 9.72  | 9.05    | 9.05  | 10.07               | 9.82  |        |
| Patient Days  | 668     | 542    | 486     | 426   | 476     | 414    | 344     | 325   | 318     | 274   | 247     | 243   | 190     | 190   | 252                 | 236   |        |
| Avg RIW   | 9.388   | 8.098  | 2.651   | 2.710 | 4.421   | 3.265  | 2.719   | 2.904 | 2.579   | 2.200 | 3.485   | 3.592 | 2.167   | 2.167 | 2.777               | 2.674 |        |
| Weighted Cases  | 451     | 332    | 93      | 84    | 150     | 101    | 84      | 81    | 72      | 57    | 91      | 90    | 46      | 46    | 69                  | 64    |        |
| <b>Transient Ischemic Attack (29)</b>                   |         |        |         |       |         |        |         |       |         |       |         |       |         |       |                     |       |        |
| Cases   | 17      | 14     | 15      | 13    | 13      | 13     | 21      | 21    | 9       | 8     | 10      | 10    | 12      | 12    | 10                  | 10    | 96.8%  |
| ALOS  | 2.88    | 3.14   | 3.80    | 4.23  | 3.54    | 3.54   | 5.86    | 5.86  | 1.89    | 1.88  | 3.40    | 3.40  | 3.83    | 3.83  | 3.13                | 3.17  |        |
| Patient Days  | 49      | 44     | 57      | 55    | 46      | 46     | 123     | 123   | 17      | 15    | 34      | 34    | 46      | 46    | 32                  | 32    |        |
| Avg RIW   | 0.559   | 0.564  | 0.553   | 0.569 | 0.631   | 0.631  | 0.805   | 0.805 | 0.578   | 0.575 | 0.740   | 0.740 | 0.750   | 0.750 | 0.697               | 0.700 |        |
| Weighted Cases  | 10      | 8      | 8       | 7     | 8       | 8      | 17      | 17    | 5       | 5     | 7       | 7     | 9       | 9     | 7                   | 7     |        |
| <b>Total</b>  |         |        |         |       |         |        |         |       |         |       |         |       |         |       |                     |       |        |
| Cases   | 108     | 91     | 89      | 79    | 87      | 80     | 96      | 90    | 92      | 88    | 79      | 77    | 84      | 83    | 85                  | 83    | 97.3%  |
| ALOS  | 11.11   | 9.86   | 10.51   | 10.19 | 12.21   | 11.19  | 11.05   | 11.34 | 10.32   | 10.22 | 7.84    | 7.94  | 8.57    | 8.58  | 8.97                | 8.96  |        |
| Patient Days  | 1,200   | 897    | 935     | 805   | 1,062   | 895    | 1,061   | 1,021 | 949     | 899   | 619     | 611   | 720     | 712   | 763                 | 741   |        |
| Avg RIW   | 5.854   | 4.752  | 2.900   | 2.946 | 3.666   | 3.064  | 2.644   | 2.734 | 2.178   | 2.088 | 2.166   | 2.197 | 2.711   | 2.725 | 2.350               | 2.335 |        |
| Weighted Cases  | 632     | 432    | 258     | 233   | 319     | 245    | 254     | 246   | 200     | 184   | 171     | 169   | 228     | 226   | 200                 | 193   |        |

## Appendix C: Background Data for Key Assumptions

Recombinant tissue plasminogen activator (tPA) is used for thrombolytic treatment of acute ischemic stroke (AIS) patients. This type of stroke comprises 80% of all stroke. Treatment rates in Canada and the U.S. are low, and vary with the treatment site, ranging from less than 5% of acute stroke nationwide (2008)<sup>1</sup> to over 30% in some stroke centres in Ontario (2005).<sup>2</sup>

### *Arrival at Emergency Department <3 h*

tPA must be administered within 3 hours of symptom onset; the most common reason for exclusion from treatment is arrival at hospital outside of this time window. One recent study examined the efficacy and safety of tPA when administered 3 to 4.5 hours after onset of acute ischemic stroke, and it was found that clinical outcomes were significantly improved.<sup>3</sup> However, 3 hours is the current standard time window for tPA administration. Other reasons for exclusion include mild stroke severity, medical and surgical history, and blood test results.

In a U.S. population-based study of eligibility for tPA in acute ischemic stroke, 80% of all patients with ischemic stroke (n=2,308) presented to the emergency department (ED).<sup>4</sup> Of those, 22% presented to the ED less than 3 hours from symptom onset. Although these patients met the time criteria, there were many other reasons for non-time-related exclusions, as outlined below:

| <b>Non-time-related exclusions for tPA in Acute Ischemic Stroke Patients</b> |   |
|--|---|
| <b>Exclusion criteria</b>  | <b>Patients presenting to ED &lt;3 hours (n=406), n (%)</b> |
| Mild stroke severity   | 174 (43)  |
| Extreme hypertension   | 39 (10)   |
| Seizure at onset   | 28 (7)  |
| INR>1.5  | 11 (3)  |
| PTT>40 s   | 9 (2)   |
| Platelet <100 000/mm <sup>3</sup>  | 3(1)  |
| Glucose >400 mg/dL   | 8 (2)   |
| Glucose <50 mg/dL  | 4 (1)   |
| Recent ischemic stroke (<3 mo)   | 5 (1)   |
| Other  | 6 (1)   |

Adapted from Kleindorfer et al., *Stroke* (2004)

A remaining 38% of those who presented to the ED within the 3 hour time window were eligible for treatment. The data in this study was collected in 1993 to 1994 in the greater Cincinnati metropolitan area. The authors estimate that 8% of ischemic stroke patients presenting to an ED, or 6.4% of all ischemic stroke patients, were eligible for tPA. If time of

<sup>1</sup> Deshpande A KS, McKibbin A, Rizo C, Jadad AR. *Telehealth for Acute Stroke Management (Telestroke): Systematic review of analytic studies and environmental scan of relevant initiatives [Technology report number 99]*. 2008. Canadian Agency for Drugs and Technologies in Health. Available at [http://www.cadth.ca/media/pdf/456\\_Telestroke\\_tr\\_e.pdf](http://www.cadth.ca/media/pdf/456_Telestroke_tr_e.pdf). Accessed October 2008.

<sup>2</sup> Lewis M, Trypuc J, Lindsay P et al. Has Ontario's Stroke System really made a difference? *Healthcare Quarterly*. 2006; 9(4): 50-9, 2.

<sup>3</sup> Hacke W, Kaste M, Bluhmki E et al. Thrombolysis with alteplase 3 to 4.5 hours after acute ischemic stroke. *New England Journal of Medicine*. 2008; 359(13): 1317-29.

<sup>4</sup> Kleindorfer D, Kissela B, Schneider A et al. Eligibility for recombinant tissue plasminogen activator in acute ischemic stroke: a population-based study. *Stroke*. 2004; 35(2): e27-9.

presentation were eliminated as a factor, still only 29% of all stroke patients would have been eligible for tPA.

In a Canadian study of tPA eligibility (n=1,168), 27% of ischemic stroke patients were admitted within 3 hours of symptom onset.<sup>5</sup> In Ontario, 33% of ischemic stroke patients arrive within 2.5 hours of symptom onset.<sup>6</sup> These two Canadian statistics have been averaged to 30% for the purposes of this document.

Also from the Canadian study mentioned above, of those admitted within 3 hours, 27% were treated with tPA.<sup>7</sup> This is the eligibility rate used in this document, though higher rates have been reported in international studies (U.S. 38%, Belgium 35.1%).<sup>8,9</sup> The exclusion criteria for those admitted within 3 hours in the Canadian study are outlined below:

| <b>Non-time-related exclusions for tPA in Acute Ischemic Stroke Patients</b> |   |
|--|---|
| <b>Reason for exclusion</b>  | <b>Patients presenting to ED &lt;3 hours (n=314), n (%)</b> |
| Too mild   | 41 (13.1)   |
| Clinical improvement   | 57 (18.2)   |
| Significant comorbidity  | 25 (8.0)  |
| CT scan/decision could not be made within 3 h                                | 17 (5.4)  |
| ED referral delay  | 28 (8.9)  |
| Stroke not recognized by medical staff                                       | 6 (1.9)   |
| Protocol exclusion   | 44 (14)   |
| Too elderly (mean age 86 years)  | 4 (1.3)   |
| Refused to consent   | 2 (0.6)   |
| Other  | 6 (1.9)   |

Adapted from Barber et al., *Neurology* (2001)

#### *Arrival at Emergency Department <4.5 h*

There are few studies with data on acute stroke patients admitted at 4.5 h from symptom onset, though many report on the 3-6 h time point. Data from these studies are outlined in the table below.<sup>10,11,12,13,14,15,16</sup>

<sup>5</sup> Barber PA, Zhang J, Demchuk AM et al. Why are stroke patients excluded from TPA therapy? An analysis of patient eligibility. *Neurology*. 2001; 56(8): 1015-20.

<sup>6</sup> Kapral MK, Lindsay MP, Silver FL et al. *Report on the 2002/03 Ontario Stroke Audit*. 2006. Institute for Clinical Evaluative Sciences. Available at [http://www.ices.on.ca/file/Stroke\\_report\\_June\\_2006\\_prelim\\_baseline.pdf](http://www.ices.on.ca/file/Stroke_report_June_2006_prelim_baseline.pdf). Accessed October 2008.

<sup>7</sup> Barber PA, Zhang J, Demchuk AM et al. Why are stroke patients excluded from TPA therapy? An analysis of patient eligibility. *Neurology*. 2001; 56(8): 1015-20.

<sup>8</sup> Laloux P, Thijs V, Peeters A et al. Obstacles to the use of intravenous tissue plasminogen activator for acute ischemic stroke. Is time the only barrier? *Acta Neurologica Belgica*. 2007; 107(4): 103-7.

<sup>9</sup> Kleindorfer D, Kissela B, Schneider A et al. Eligibility for recombinant tissue plasminogen activator in acute ischemic stroke: a population-based study. *Stroke*. 2004; 35(2): e27-9.

<sup>10</sup> Smith MA, Doliszny KM, Shahar E et al. Delayed hospital arrival for acute stroke: the Minnesota Stroke Survey. *Annals of Internal Medicine*. 1998; 129(3): 190-6.

<sup>11</sup> Morris DL, Rosamond W, Madden K et al. Prehospital and emergency department delays after acute stroke: the Genentech Stroke Presentation Survey. *Stroke*. 2000; 31(11): 2585-90.

<sup>12</sup> Lacy CR, Suh DC, Bueno M et al. Delay in presentation and evaluation for acute stroke: Stroke Time Registry for Outcomes Knowledge and Epidemiology (S.T.R.O.K.E.). *Stroke*. 2001; 32(1): 63-9.

| Time From Symptom Onset to Emergency Department (ED) Admission<br>For Acute AVCS Patients |          |              |                       |                       |                       |                       |                       |                       |
|---|----------|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Study   | Location | n            | Arrival at<br>ED <2 h | Arrival at<br>ED <2 h | Arrival at<br>ED <3 h | Arrival at<br>ED <3 h | Arrival at<br>ED <6 h | Arrival at<br>ED <6 h |
|   |          |              | n                     | %                     | n                     | %                     | n                     | %                     |
| Smith et al. (1998)   | USA      | 1,334        | 534                   | 40%                   | 667                   | 50%                   | 880                   | 66%                   |
| Morris et al. (2000)  | USA      | 730          | 153                   | 21%                   | 404                   | 55%                   | 548                   | 75%                   |
| Lacy et al. (2001)  | USA      | 483          |                       |                       | 222                   | 46%                   | 295                   | 61%                   |
| Harraf et al. (2002)  | UK       | 729          |                       |                       | 271                   | 37%                   | 364                   | 50%                   |
| Kleindorfer et al. (2004)   | USA      | 1,849        | 351                   | 19%                   | 406                   | 22%                   | 500                   | 27%                   |
| Maestroni et al. (2008)   | Italy    | 375          |                       |                       | 73                    | 19%                   | 141                   | 38%                   |
| Palomeras et al. (2008)   | Spain    | 292          | 130                   | 45%                   | 168                   | 58%                   | 194                   | 66%                   |
| <b>Total</b>  |          | <b>5,792</b> | <b>1,168</b>          | <b>28%</b>            | <b>2,211</b>          | <b>38%</b>            | <b>2,922</b>          | <b>50%</b>            |

Based on this survey of international studies, approximately 28% of acute stroke patients arrive at the emergency department within 2 hours of symptom onset, 38% arrive within 3 hours, and 50% arrive within 6 hours. We assumed that 44% of patients would arrive within the 4.5 hour time window based on this international data.

As noted earlier, we used Canadian data to estimate that 30% of all ischemic stroke patients arrive at the ED<3 h. Using the percentage differences in the international studies, the % arrival at ED<4.5 h in Canada can be estimated as 35% and the % arrival at ED<2 h in Canada can be estimated as 22%.

<sup>13</sup> Harraf F, Sharma AK, Brown MM et al. A multicentre observational study of presentation and early assessment of acute stroke. *BMJ*. 2002; 325(7354): 17.

<sup>14</sup> Kleindorfer D, Kissela B, Schneider A et al. Eligibility for recombinant tissue plasminogen activator in acute ischemic stroke: a population-based study. *Stroke*. 2004; 35(2): e27-9.

<sup>15</sup> Maestroni A, Mandelli C, Manganaro D et al. Factors influencing delay in presentation for acute stroke in an emergency department in Milan, Italy. *Emergency Medicine Journal*. 2008; 25(6): 340-5.

<sup>16</sup> Palomeras E, Fossas P, Quintana M et al. Emergency perception and other variables associated with extra-hospital delay in stroke patients in the Maresme region (Spain). *European Journal of Neurology*. 2008; 15(4): 329-35.