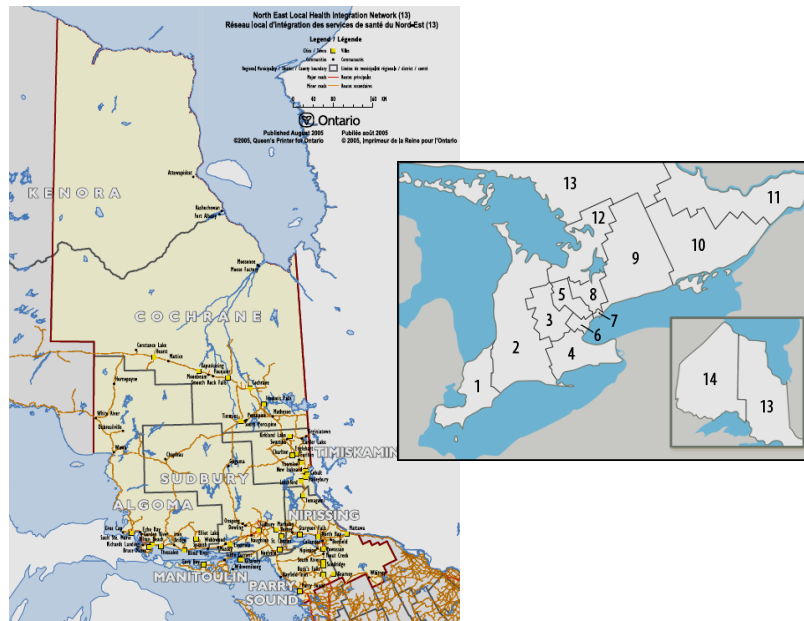


Acquired Brain Injury by Local Health Integration Network in Ontario

North East



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Acknowledgements:

This study was funded by the Ontario Neurotrauma Foundation. We wish to acknowledge support from the Ontario Ministry of Health and Long Term Care, the Toronto Rehabilitation Institute – UHN, and the University of Toronto.

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Methods

Acquired brain injury (ABI), which includes brain injury from traumatic (e.g., falls, motor vehicle collisions) and non-traumatic (e.g., anoxia, brain tumours) causes, is a leading cause of death and disability in Canada (please see Table 13 and Table 14 for a list of ABI definitions used in this report). ABI is more common than breast cancer, HIV/AIDS, spinal cord injury, and multiple sclerosis combined. The ABI Dataset Project, funded by the Ontario Neurotrauma Foundation, utilized existing administrative data to answer important research questions about ABI in Ontario that resulted from a recent publication of ABI by Local Health Integration Network (LHIN) in Ontario (please see www.onf.org → ABI → Program in Action → ABI Data).

This analysis included fiscal years 2003/04 to 2009/10. LHIN-specific analyses based on inpatient acute care data were obtained from the Discharge Abstract Database (DAD) and inpatient rehabilitation data were obtained from the National Rehabilitation Reporting System (NRS).

Six questions were addressed in this report:

1. Who is discharged to long term care from acute care?
2. Who is discharged to inpatient rehabilitation from acute care?
3. Who is living in residential care at discharge from inpatient rehabilitation?
4. What are the characteristics of ABI patients with 15+ days in alternate level of care?
5. What are the characteristics of ABI patients with extended length of stay in acute care?
6. Who is readmitted to acute care within 30 days of discharge?

Definitions of terms used in the report:

- **Alternate Level of Care (ALC):** An ALC patient is one who “has completed the acute care phase of his or her treatment but remains in the acute care bed” (CIHI 2009)
- **Charlson Comorbidity Index:** The Charlson Comorbidity Index estimates the risk of death from comorbid diseases and is calculated as an indicator of the need of patients with ABI
- **Special Care Days:** The cumulative number of days spent in all intensive care units

Who is Discharged to Long Term Care from Acute Care?

Table 1. Characteristics of TBI Patients Discharged to Long Term Care from Acute Care, 2003/04 – 2009/10

Characteristics	North East		Ontario	
	N	Col%	N	Col%
Overall	61	100	1,558	100
Age				
<19	0	0	<5	.
19 – 54	<5	.	NR	.
55 – 64	<5	.	128	8.2
65 – 74	11	18.0	168	10.8
75 – 84	19	31.1	520	33.4
85+	23	37.7	627	40.2
Sex				
Female	29	47.5	825	53.0
Male	32	52.5	733	47.0
Fiscal Year of Discharge				
2003/04	8	13.1	169	10.8
2004/05	<5	.	186	11.9
2005/06	<5	.	199	12.8
2006/07	10	16.4	221	14.2
2007/08	9	14.8	228	14.6
2008/09	13	21.3	264	16.9
2009/10	12	19.7	291	18.7
Length of Stay in Acute Care				
1 – 2	<5	.	102	6.5
3 – 5	15	24.6	258	16.6
6 – 11	NR	.	314	20.2
12+	33	54.1	884	56.7
Charlson Comorbidity Index Score				
0 – 1 (low)	43	70.5	1,168	75.0
2 - 3	NR	.	311	20.0
4+ (high)	<5	.	79	5.1
Psychiatric Comorbidity				
Yes	26	42.6	724	46.5
No	35	57.4	834	53.5
Number of ALC Days				
None	37	60.7	893	57.3
1 – 2	<5	.	32	2.1
3 – 5	0	0	35	2.2
6 – 11	<5	.	101	6.5

Characteristics	North East		Ontario	
	N	Col%	N	Col%
12+	20	32.8	497	31.9
Number of Special Care Days				
None	48	78.7	1,308	84.0
1 – 2	6	9.8	79	5.1
3 – 5	<5	.	75	4.8
6 – 11	<5	.	51	3.3
12+	<5	.	45	2.9
Motor Vehicle Collision				
Yes	0	0	77	4.9
No	61	100	1,481	95.1
Number of Previous ABI Admissions				
0	46	75.4	1,135	72.8
1	NR	.	315	20.2
2+	<5	.	108	6.9

Note: NR = not reportable due to small cell size

Table 2. Characteristics of nTBI Patients Discharged to Long Term Care from Acute Care, 2003/04 – 2009/10

Characteristics	North East		Ontario	
	N	Col%	N	Col%
Overall	163	100	4,214	100
Age				
<19	<5	.	<5	.
19 – 54	NR	.	NR	.
55 – 64	15	9.2	397	9.4
65 – 74	40	24.5	755	17.9
75 – 84	58	35.6	1,619	38.4
85+	36	22.1	1,168	27.7
Sex				
Female	103	63.2	2,466	58.5
Male	60	36.8	1,748	41.5
Fiscal Year of Discharge				
2003/04	23	14.1	683	16.2
2004/05	36	22.1	688	16.3
2005/06	15	9.2	630	15.0
2006/07	23	14.1	582	13.8
2007/08	23	14.1	533	12.6
2008/09	18	11.0	569	13.5
2009/10	25	15.3	529	12.6
Length of Stay in Acute Care				
1 – 2	<5	.	149	3.5
3 – 5	NR	.	612	14.5
6 – 11	46	28.2	1,041	24.7
12+	86	52.8	2,412	57.2
Charlson Comorbidity Index Score				
0 – 1 (low)	66	40.5	1,832	43.5
2 – 3	48	29.4	1,406	33.4
4+ (high)	49	30.1	976	23.2
Psychiatric Comorbidity				
Yes	47	28.8	1,546	36.7
No	116	71.2	2,668	63.3
Number of ALC Days				
None	95	58.3	2,645	62.8
1 – 2	<5	.	81	1.9
3 – 5	0	0	100	2.4
6 – 11	NR	.	277	6.6
12+	52	31.9	1,111	26.4
Number of Special Care Days				
None	137	84.0	3,613	85.7
1 – 2	10	6.1	202	4.8
3 – 5	7	4.3	165	3.9
6 – 11	<5	.	118	2.8

Characteristics	North East		Ontario	
	N	Col%	N	Col%
12+	<5	.	116	2.8
Number of Previous ABI Admissions				
0	103	63.2	2,868	68.1
1	38	23.3	848	20.1
2+	22	13.5	498	11.8

Note: NR = not reportable due to small cell size

Who is Discharged to Inpatient Rehabilitation from Acute Care?

Table 3. Characteristics of TBI Patients Discharged to Inpatient Rehabilitation from Acute Care, 2003/04 – 2009/10

Characteristics	North East		Ontario	
	N	Col%	N	Col%
Overall	165	100	3,248	100
Age				
<19	NR	.	182	5.6
19 – 54	73	44.2	1,276	39.3
55 – 64	27	16.4	382	11.8
65 – 74	19	11.5	454	14.0
75 – 84	27	16.4	659	20.3
85+	<5	.	295	9.1
Sex				
Female	51	30.9	1,144	35.2
Male	114	69.1	2,104	64.8
Fiscal Year of Discharge				
2003/04	20	12.1	375	11.5
2004/05	21	12.7	396	12.2
2005/06	22	13.3	423	13.0
2006/07	25	15.2	471	14.5
2007/08	26	15.8	522	16.1
2008/09	28	17.0	515	15.9
2009/10	23	13.9	546	16.8
Length of Stay in Acute Care				
1 – 2	0	0	22	0.7
3 – 5	6	3.6	159	4.9
6 – 11	33	20.0	642	19.8
12+	126	76.4	2,425	74.7
Charlson Comorbidity Index Score				
0 – 1 (low)	150	90.9	2,804	86.3
2 - 3	NR	.	389	12.0
4+ (high)	<5	.	55	1.7
Psychiatric Comorbidity				
Yes	39	23.6	667	20.5
No	126	76.4	2,581	79.5
Number of ALC Days				
None	110	66.7	1,669	51.4
1 – 2	NR	.	232	7.1
3 – 5	<5	.	281	8.7
6 – 11	14	8.5	456	14.0

Characteristics	North East		Ontario	
	N	Col%	N	Col%
12+	29	17.6	610	18.8
Number of Special Care Days				
None	65	39.4	1,429	44.0
1 – 2	18	10.9	351	10.8
3 – 5	24	14.5	376	11.6
6 – 11	19	11.5	423	13.0
12+	39	23.6	669	20.6
Motor Vehicle Collision				
Yes	53	32.1	1,003	30.9
No	112	67.9	2,245	69.1
Number of Previous ABI Admissions				
0	123	74.5	2,294	70.6
1	NR	.	771	23.7
2+	<5	.	183	5.6

Note: NR = not reportable due to small cell size

Table 4. Characteristics of nTBI Patients Discharged to Inpatient Rehabilitation from Acute Care, 2003/04 – 2009/10

Characteristics	North East		Ontario	
	N	Col%	N	Col%
Overall	171	100	4,936	100
Age				
<19	7	4.1	51	1.0
19 – 54	51	29.8	1,325	26.8
55 – 64	36	21.1	931	18.9
65 – 74	35	20.5	1,060	21.5
75 – 84	35	20.5	1,193	24.2
85+	7	4.1	376	7.6
Sex				
Female	69	40.4	2,293	46.5
Male	102	59.6	2,643	53.5
Fiscal Year of Discharge				
2003/04	21	12.3	605	12.3
2004/05	19	11.1	646	13.1
2005/06	18	10.5	697	14.1
2006/07	29	17.0	714	14.5
2007/08	25	14.6	714	14.5
2008/09	27	15.8	744	15.1
2009/10	32	18.7	816	16.5
Length of Stay in Acute Care				
1 – 2	<5	.	50	1.0
3 – 5	NR	.	271	5.5
6 – 11	31	18.1	1,037	21.0
12+	122	71.3	3,578	72.5
Charlson Comorbidity Index Score				
0 – 1 (low)	97	56.7	2,613	52.9
2 – 3	52	30.4	1,436	29.1
4+ (high)	22	12.9	887	18.0
Psychiatric Comorbidity				
Yes	36	21.1	836	16.9
No	135	78.9	4,100	83.1
Number of ALC Days				
None	86	50.3	2,660	53.9
1 – 2	13	7.6	399	8.1
3 – 5	22	12.9	460	9.3
6 – 11	17	9.9	639	12.9
12+	33	19.3	778	15.8
Number of Special Care Days				
None	96	56.1	2,710	54.9
1 – 2	17	9.9	627	12.7
3 – 5	17	9.9	482	9.8
6 – 11	17	9.9	436	8.8

Characteristics	North East		Ontario	
	N	Col%	N	Col%
12+	24	14.0	681	13.8
Number of Previous ABI Admissions				
0	81	47.4	2,848	57.7
1	69	40.4	1,322	26.8
2+	21	12.3	766	15.5

Note: NR = not reportable due to small cell size

Who Lives in Residential Care* at Discharge from Inpatient Rehabilitation?

* This analysis combined data for ABI patients living in a residential care facility and those living in assisted living settings at discharge from inpatient rehabilitation.

Table 5. Characteristics of TBI Patients Living in Residential Care at Discharge from Inpatient Rehabilitation, 2003/04 - 2009/10

Characteristics	North East		Ontario	
	N	Col%	N	Col%
Overall	19	100	431	100
Age				
19 – 54	7	36.8	136	31.6
55 – 64	<5	.	49	11.4
65 – 74	<5	.	55	12.8
75 – 84	8	42.1	117	27.1
85+	<5	.	74	17.2
Sex				
Female	10	52.6	183	42.5
Male	9	47.4	248	57.5
Fiscal Year of Discharge				
2003/04	<5	.	70	16.2
2004/05	<5	.	65	15.1
2005/06	<5	.	57	13.2
2006/07	<5	.	67	15.5
2007/08	<5	.	63	14.6
2008/09	<5	.	68	15.8
2009/10	<5	.	41	9.5
Length of Stay in Acute Care				
1 – 2	<5	.	6	1.4
3 – 5	<5	.	18	4.2
6 – 11	<5	.	67	15.5
12+	12	63.2	340	78.9
Charlson Comorbidity Index Score				
0 – 1 (low)	14	73.7	358	83.1
2 - 3	<5	.	61	14.2
4+ (high)	<5	.	12	2.8
Psychiatric Comorbidity				
Yes	<5	.	97	22.5
No	NR	.	334	77.5
Number of ALC Days				
None	15	78.9	210	48.7
1 – 2	0	0	21	4.9

Characteristics	North East		Ontario	
	N	Col%	N	Col%
3 – 5	0	0	28	6.5
6 – 11	<5	.	65	15.1
12+	<5	.	107	24.8
Number of Special Care Days				
None	7	36.8	187	43.4
1 – 2	<5	.	48	11.1
3 – 5	<5	.	42	9.7
6 – 11	<5	.	50	11.6
12+	7	36.8	104	24.1
Motor Vehicle Collision				
Yes	6	31.6	120	27.8
No	13	68.4	311	72.2
Number of Previous ABI Admissions				
0	NR	.	333	77.3
1	<5	.	81	18.8
2+	0	0	17	3.9

Note: NR = not reportable due to small cell size

Table 6. Characteristics of nTBI Patients Living in Residential Care at Discharge from Inpatient Rehabilitation, 2003/04 - 2009/10

Characteristics	North East		Ontario	
	N	Col%	N	Col%
Overall	15	100	525	100
Age				
19 – 54	<5	.	135	25.7
55 – 64	<5	.	74	14.1
65 – 74	<5	.	96	18.3
75 – 84	6	40.0	157	29.9
85+	<5	.	63	12.0
Sex				
Female	7	46.7	268	51.0
Male	8	53.3	257	49.0
Fiscal Year of Discharge				
2003/04	<5	.	82	15.6
2004/05	<5	.	94	17.9
2005/06	0	0	71	13.5
2006/07	<5	.	85	16.2
2007/08	<5	.	65	12.4
2008/09	<5	.	70	13.3
2009/10	<5	.	58	11.0
Length of Stay in Acute Care				
1 – 2	<5	.	13	2.5
3 – 5	<5	.	43	8.2
6 – 11	<5	.	81	15.4
12+	10	66.7	388	73.9
Charlson Comorbidity Index Score				
0 – 1 (low)	8	53.3	303	57.7
2 - 3	NR	.	170	32.4
4+ (high)	<5	.	52	9.9
Psychiatric Comorbidity				
Yes	<5	.	113	21.5
No	NR	.	412	78.5
Number of ALC Days				
None	NR	.	279	53.1
1 – 2	<5	.	28	5.3
3 – 5	<5	.	45	8.6
6 – 11	0	0	64	12.2
12+	<5	.	109	20.8
Number of Special Care Days				
None	9	60.0	298	56.8
1 – 2	<5	.	44	8.4
3 – 5	<5	.	43	8.2
6 – 11	0	0	49	9.3

Characteristics	North East		Ontario	
	N	Col%	N	Col%
12+	<5	.	91	17.3
Number of Previous ABI Admissions				
0	9	60.0	394	75.0
1	6	40.0	101	19.2
2+	0	0	30	5.7

Note: NR = not reportable due to small cell size

What are the Characteristics of ABI Patients with 15+ Days in ALC*?

* This analysis focused on the characteristics of ABI patients with 15+ days in ALC as a result of feedback received from LHINs on the recently published ABI reports.

Table 7. Characteristics of TBI Patients with 15+ Days in ALC, 2003/04 - 2009/10

Characteristics	North East		Ontario	
	N	Col%	N	Col%
Overall	99	100	1,791	100
Age				
<19	0	0	31	1.7
19 – 54	22	22.2	413	23.1
55 – 64	16	16.2	206	11.5
65 – 74	19	19.2	255	14.2
75 – 84	26	26.3	464	25.9
85+	16	16.2	422	23.6
Sex				
Female	33	33.3	698	39.0
Male	66	66.7	1,093	61.0
Fiscal Year of Discharge				
2003/04	11	11.1	181	10.1
2004/05	9	9.1	204	11.4
2005/06	14	14.1	181	10.1
2006/07	14	14.1	233	13.0
2007/08	16	16.2	304	17.0
2008/09	15	15.2	335	18.7
2009/10	20	20.2	353	19.7
Charlson Comorbidity Index Score				
0 – 1 (low)	75	75.8	1,361	76.0
2 - 3	NR	.	327	18.3
4+ (high)	<5	.	103	5.8
Psychiatric Comorbidity				
Yes	44	44.4	747	41.7
No	55	55.6	1,044	58.3
Number of Special Care Days				
None	60	60.6	1,071	59.8
1 – 2	<5	.	99	5.5
3 – 5	NR	.	139	7.8
6 – 11	9	9.1	150	8.4
12+	17	17.2	332	18.5
Motor Vehicle Collision				
Yes	15	15.2	299	16.7

Characteristics	North East		Ontario	
	N	Col%	N	Col%
No	84	84.8	1,492	83.3
Number of Previous ABI Admissions				
0	66	66.7	1,215	67.8
1	27	27.3	462	25.8
2+	6	6.1	114	6.4
Discharge Destination ¹				
Death	11	11.1	135	7.5
Home	29	29.3	378	21.1
Inpatient Rehabilitation	23	23.2	479	26.7
Long Term Care	18	18.2	442	24.7
Transferred ²	18	18.2	350	19.5

Note: NR = not reportable due to small cell size

¹ Missing values were excluded and thus, column percentages may not add up to 100%

² Transferred includes transferred to another facility providing inpatient hospital care and to other

Table 8. Characteristics of nTBI Patients with 15+ Days in ALC, 2003/04 - 2009/10

Characteristics	North East		Ontario	
	N	Col%	N	Col%
Overall	398	100	4,662	100
Age				
<19	<5	.	16	0.3
19 – 54	75	18.8	812	17.4
55 – 64	67	16.8	771	16.5
65 – 74	116	29.1	1,019	21.9
75 – 84	104	26.1	1,425	30.6
85+	NR	.	619	13.3
Sex				
Female	186	46.7	2,260	48.5
Male	212	53.3	2,402	51.5
Fiscal Year of Discharge				
2003/04	49	12.3	648	13.9
2004/05	49	12.3	554	11.9
2005/06	62	15.6	585	12.5
2006/07	50	12.6	645	13.8
2007/08	58	14.6	718	15.4
2008/09	68	17.1	760	16.3
2009/10	62	15.6	752	16.1
Charlson Comorbidity Index Score				
0 – 1 (low)	120	30.2	1,571	33.7
2 - 3	114	28.6	1,423	30.5
4+ (high)	164	41.2	1,668	35.8
Psychiatric Comorbidity				
Yes	83	20.9	1,491	32.0
No	315	79.1	3,171	68.0
Number of Special Care Days				
None	310	77.9	3,309	71.0
1 – 2	22	5.5	226	4.8
3 – 5	21	5.3	257	5.5
6 – 11	22	5.5	297	6.4
12+	23	5.8	573	12.3
Number of Previous ABI Admissions				
0	196	49.2	2,837	60.9
1	112	28.1	1,151	24.7
2+	90	22.6	674	14.5
Discharge Destination ¹				
Death	146	36.7	1,054	22.6
Home	93	23.4	780	16.7
Inpatient Rehabilitation	28	7.0	599	12.8
Long Term Care	49	12.3	973	20.9

Characteristics	North East		Ontario	
	N	Col%	N	Col%
Transferred ²	81	20.4	1,241	26.6

Note: NR = not reportable due to small cell size

¹ Missing values were excluded and thus, column percentages may not add up to 100%

² Transferred includes transferred to another facility providing inpatient hospital care and to other

Who is Discharged with Extended Length of Stay* in Acute Care?

* Extended length of stay (LOS) is defined as LOS in the 75th percentile and higher.

Table 9. Characteristics of TBI Patients Discharged with Extended Length of Stay in Acute Care, 2003/04 - 2009/10

Characteristics	North East		Ontario	
	N	Col%	N	Col%
Overall	521	100	9,399	100
Age				
<19	64	12.3	912	9.7
19 – 54	158	30.3	2,822	30.0
55 – 64	63	12.1	958	10.2
65 – 74	88	16.9	1,266	13.5
75 – 84	109	20.9	2,059	21.9
85+	39	7.5	1,382	14.7
Sex				
Female	175	33.6	3,454	36.7
Male	346	66.4	5,945	63.3
Fiscal Year of Discharge				
2003/04	83	15.9	1,169	12.4
2004/05	78	15.0	1,296	13.8
2005/06	75	14.4	1,269	13.5
2006/07	70	13.4	1,286	13.7
2007/08	73	14.0	1,407	15.0
2008/09	63	12.1	1,414	15.0
2009/10	79	15.2	1,558	16.6
Charlson Comorbidity Index Score				
0 – 1 (low)	441	84.6	7,539	80.2
2 - 3	64	12.3	1,437	15.3
4+ (high)	16	3.1	423	4.5
Psychiatric Comorbidity				
Yes	156	29.9	2,948	31.4
No	365	70.1	6,451	68.6
Number of ALC Days				
None	341	65.5	5,545	59.0
1 – 2	14	2.7	256	2.7
3 – 5	16	3.1	433	4.6
6 – 11	33	6.3	1,005	10.7
12+	117	22.5	2,160	23.0
Number of Special Care Days				
None	254	48.8	4,529	48.2
1 – 2	45	8.6	730	7.8

Characteristics	North East		Ontario	
	N	Col%	N	Col%
3 – 5	61	11.7	1,052	11.2
6 – 11	75	14.4	1,248	13.3
12+	86	16.5	1,840	19.6
Motor Vehicle Collision				
Yes	110	21.1	2,203	23.4
No	411	78.9	7,196	76.6
Number of Previous ABI Admissions				
0	360	69.1	6,706	71.3
1	129	24.8	2,097	22.3
2+	32	6.1	596	6.3
Discharge Destination ¹				
Death	40	7.7	890	9.5
Home	216	41.5	3,641	38.7
Inpatient Rehabilitation	121	23.2	2,303	24.5
Long Term Care	33	6.3	851	9.1
Transferred ²	109	20.9	1,677	17.8

Note: ¹ Missing values were excluded and thus, column percentages may not add up to 100%

² Transferred includes transferred to another facility providing inpatient hospital care and to other

Table 10. Characteristics of nTBI Patients Discharged with Extended Length of Stay in Acute Care, 2003/04 – 2009/10

Characteristics	North East		Ontario	
	N	Col%	N	Col%
Overall	1,602	100	29,710	100
Age				
<19	105	6.6	2,315	7.8
19 – 54	332	20.7	6,357	21.4
55 – 64	325	20.3	5,387	18.1
65 – 74	429	26.8	6,511	21.9
75 – 84	337	21.0	6,807	22.9
85+	74	4.6	2,333	7.9
Sex				
Female	771	48.1	14,355	48.3
Male	831	51.9	15,355	51.7
Fiscal Year of Discharge				
2003/04	257	16.0	4,445	15.0
2004/05	219	13.7	4,273	14.4
2005/06	228	14.2	4,294	14.5
2006/07	216	13.5	4,039	13.6
2007/08	204	12.7	4,045	13.6
2008/09	232	14.5	4,251	14.3
2009/10	246	15.4	4,363	14.7
Charlson Comorbidity Index Score				
0 – 1 (low)	535	33.4	10,238	34.5
2 – 3	415	25.9	8,033	27.0
4+ (high)	652	40.7	11,439	38.5
Psychiatric Comorbidity				
Yes	281	17.5	6,413	21.6
No	1,321	82.5	23,297	78.4
Number of ALC Days				
None	965	60.2	20,085	67.6
1 – 2	31	1.9	644	2.2
3 – 5	47	2.9	1,008	3.4
6 – 11	108	6.7	2,285	7.7
12+	451	28.2	5,688	19.1
Number of Special Care Days				
None	1,026	64.0	18,596	62.6
1 – 2	131	8.2	1,958	6.6
3 – 5	118	7.4	2,025	6.8
6 – 11	120	7.5	2,454	8.3
12+	207	12.9	4,677	15.7
Number of Previous ABI Admissions				
0	870	54.3	18,246	61.4
1	422	26.3	6,867	23.1
2+	310	19.4	4,597	15.5

Characteristics	North East		Ontario	
	N	Col%	N	Col%
Discharge Destination ¹				
Death	517	32.3	7,645	25.7
Home	669	41.8	11,618	39.1
Inpatient Rehabilitation	102	6.4	2,930	9.9
Long Term Care	73	4.6	2,027	6.8
Transferred ²	240	15.0	5,418	18.2

Note: ¹ Missing values were excluded and thus, column percentages may not add up to 100%

² Transferred includes transferred to another facility providing inpatient hospital care and to other

Who is Readmitted to Acute Care within One Month of Discharge?

Table 11. Characteristics of TBI Patients Readmitted to Acute Care within One Month of Discharge, 2003/04 - 2008/09

Characteristics	North East (N = 2,068)		Ontario (N = 30,579)	
	N	Col%	N	Col%
Overall	66	100	1,220	100
Age				
<19	10	15.2	199	16.3
19 – 54	20	30.3	386	31.6
55 – 64	NR	.	144	11.8
65 – 74	10	15.2	160	13.1
75 – 84	15	22.7	235	19.3
85+	<5	.	96	7.9
Sex				
Female	17	25.8	360	29.5
Male	49	74.2	860	70.5
Fiscal Year of Discharge				
2003/04	11	16.7	163	13.4
2004/05	8	12.1	238	19.5
2005/06	11	16.7	224	18.4
2006/07	13	19.7	190	15.6
2007/08	9	13.6	186	15.2
2008/09	14	21.2	219	18.0
Length of Stay in Acute Care				
1 – 2	10	15.2	194	15.9
3 – 5	24	36.4	410	33.6
6 – 11	20	30.3	282	23.1
12+	12	18.2	334	27.4
Charlson Comorbidity Index Score				
0 – 1 (low)	NR	.	1,068	87.5
2 - 3	<5	.	124	10.2
4+ (high)	0	0	28	2.3
Psychiatric Comorbidity				
Yes	16	24.2	277	22.7
No	50	75.8	943	77.3
Number of ALC Days				
None	63	95.5	1,099	90.1
1 – 2	<5	.	22	1.8
3 – 5	0	0	18	1.5
6 – 11	0	0	28	2.3
12+	<5	.	53	4.3

Characteristics	North East (N = 2,068)		Ontario (N = 30,579)	
	N	Col%	N	Col%
Number of Special Care Days				
None	53	80.3	867	71.1
1 – 2	6	9.1	170	13.9
3 – 5	NR	.	86	7.0
6 – 11	<5	.	53	4.3
12+	0	0	44	3.6
Motor Vehicle Collision				
Yes	7	10.6	164	13.4
No	59	89.4	1,056	86.6
Number of Previous ABI Admissions				
0	9	13.6	76	6.2
1	36	54.5	755	61.9
2+	21	31.8	389	31.9
Discharge Destination ¹				
Home	48	72.7	911	74.7
Inpatient Rehabilitation	<5	.	111	9.1
Long Term Care	<5	.	54	4.4
Transferred ²	12	18.2	142	11.6

Note: NR = not reportable due to small cell size

¹ Missing values were excluded and thus, column percentages may not add up to 100%

² Transferred includes transferred to another facility providing inpatient hospital care and to other

Table 12. Characteristics of nTBI Patients Readmitted to Acute Care within One Month of Discharge, 2003/04 - 2008/09

Characteristics	North East (N = 5,636)		Ontario (N = 97,700)	
	N	Col%	N	Col%
Overall	607	100	9,300	100
Age				
<19	39	6.4	1,569	16.9
19 – 54	178	29.3	2,688	28.9
55 – 64	136	22.4	1,904	20.5
65 – 74	157	25.9	1,794	19.3
75 – 84	88	14.5	1,144	12.3
85+	9	1.5	201	2.2
Sex				
Female	287	47.3	4,165	44.8
Male	320	52.7	5,135	55.2
Fiscal Year of Discharge				
2003/04	113	18.6	1,562	16.8
2004/05	115	18.9	1,492	16.0
2005/06	103	17.0	1,561	16.8
2006/07	100	16.5	1,578	17.0
2007/08	93	15.3	1,553	16.7
2008/09	83	13.7	1,554	16.7
Length of Stay in Acute Care				
1 – 2	73	12.0	1,169	12.6
3 – 5	196	32.3	2,928	31.5
6 – 11	203	33.4	2,747	29.5
12+	135	22.2	2,456	26.4
Charlson Comorbidity Index Score				
0 – 1 (low)	141	23.2	2,425	26.1
2 - 3	134	22.1	2,642	28.4
4+ (high)	332	54.7	4,233	45.5
Psychiatric Comorbidity				
Yes	54	8.9	666	7.2
No	553	91.1	8,634	92.8
Number of ALC Days				
None	559	92.1	8,812	94.8
1 – 2	11	1.8	73	0.8
3 – 5	7	1.2	97	1.0
6 – 11	9	1.5	145	1.6
12+	21	3.5	173	1.9
Number of Special Care Days				
None	532	87.6	7,802	83.9
1 – 2	44	7.2	921	9.9
3 – 5	18	3.0	324	3.5
6 – 11	NR	.	152	1.6
12+	<5	.	101	1.1

Characteristics	North East (N = 5,636)		Ontario (N = 97,700)	
	N	Col%	N	Col%
Number of Previous ABI Admissions				
0	<5	.	92	1.0
1	NR	.	3,220	34.6
2+	408	67.2	5,988	64.4
Discharge Destination ¹				
Home	540	89.0	8,234	88.5
Inpatient Rehabilitation	NR	.	303	3.3
Long Term Care	<5	.	146	1.6
Transferred ²	51	8.4	611	6.6

Note: NR = not reportable due to small cell size

¹ Missing values were excluded and thus, column percentages may not add up to 100%

² Transferred includes transferred to another facility providing inpatient hospital care and to other

ICD-10 Definitions of ABI

Table 13. ICD-10 Definition of TBI

Diagnosis	ICD-10 Code and Description
1. Fracture and crushing of the skull and facial bones	<ul style="list-style-type: none"> ✓ S02.0 Fracture of vault of skull ✓ S02.1 Fracture of base of skull ✓ S02.3 Fracture of the orbital floor ✓ S02.7 Multiple fractures involving skull and facial bones ✓ S02.8 Fractures of other skull and facial bones ✓ S02.9 Fractures of skull and facial bones, part unspecified ✓ S07.1 Crushing injury of skull
2. Intracranial injury, excluding those with skull fracture	<ul style="list-style-type: none"> ✓ S06.0 Concussion ✓ S06.1 Traumatic cerebral oedema ✓ S06.2 Diffuse brain injury ✓ S06.3 Focal brain injury ✓ S06.4 Epidural hemorrhage ✓ S06.5 Traumatic subdural hemorrhage ✓ S06.6 Traumatic subarachnoid hemorrhage ✓ S06.7 Intracranial injury with prolonged coma ✓ S06.8 Other intracranial injuries ✓ S06.9 Intracranial injury, unspecified
3. Late effects of injuries The "sequelae" include conditions specified as such or as late effects, or those present one year or more after onset of the causal condition.	<ul style="list-style-type: none"> ✓ F07.2 Post concussion syndrome ✓ T90.2 Sequelae of fracture of skull and facial bones ✓ T90.5 Sequelae of intracranial injury

Table 14. ICD-10 Definition of nTBI

Diagnosis	ICD-10 Code and Description
1. Toxic effect of substances, chiefly non-medical as to source	<ul style="list-style-type: none"> ✓ T40.5 Poisoning: cocaine ✓ T42.6 Poisoning by other antiepileptic and sedative-hypnotic drugs, Methaqualone, Valproic acid ✓ T51 Toxic effect of alcohol ✓ T56 Toxic effect of metals ✓ T57.0 Toxic effect of arsenic and its compounds ✓ T57.2 Toxic effect of manganese and its compounds ✓ T57.3 Toxic effect of hydrogen cyanide ✓ T58 Toxic effect of carbon monoxide ✓ T64 Toxic effect of aflatoxin and other mycotoxin food contaminants ✓ T65.0 Toxic effect of cyanides
2. Anoxia	<ul style="list-style-type: none"> ✓ G93.1 Anoxic brain damage (includes all causes of anoxia except those occurring following abortions, ectopic pregnancy, labour and delivery and newborn) ✓ T71 Asphyxiation, suffocation (by strangulation) ✓ T75.1 Drowning and nonfatal submersion ✓ R09.0 Asphyxia
3. Vascular insults (not captured in stroke analyses)	<ul style="list-style-type: none"> ✓ I62.0 Subdural hemorrhage ✓ I62.9 Unspecified intracranial hemorrhage
4. Brain tumours	<ul style="list-style-type: none"> ✓ C70 Malignant neoplasm of brain ✓ C71 Malignant neoplasm of brain ✓ C79.3 Secondary malignant neoplasm of brain and cerebral meninges ✓ C79.4 Secondary malignant neoplasm of other and unspecified part of nervous system ✓ D32.0 Benign neoplasm of cerebral meninges ✓ D33.0 Benign neoplasm of brain, supratentorial ✓ D33.1 Benign neoplasm of brain, infratentorial ✓ D33.2 Benign neoplasm of brain, unspecified ✓ D33.3 Benign neoplasm of cranial nerves ✓ D42.0 Neoplasm of uncertain or unknown behaviour of cerebral meninges ✓ D43 Neoplasm of uncertain or unknown behaviour of brain and central nervous system ✓ D43.2 Neoplasm of brain, unspecified ✓ G06.0 Intracranial abscess and granuloma ✓ G06.1 Intraspinial abscess and granuloma ✓ G06.2 Extradural and subdural abscess, unspecified ✓ G07 Intracranial and intraspinal abscess and granuloma in disease classified elsewhere ✓ G93.0 Cerebral cysts

Diagnosis	ICD-10 Code and Description
5. Encephalitis	<ul style="list-style-type: none"> ✓ A81.1 Subacute, sclerosing encephalitis ✓ A83.0 Japanese encephalitis ✓ A83.2 Eastern equine encephalitis ✓ A86.0 Unspecified viral encephalitis ✓ B00.4 Herpes viral meningoencephalitis ✓ B01.1 Varicella encephalitis ✓ B02.0 Zoster encephalitis ✓ B05.0 Postmeasles encephalitis ✓ B94.1 Sequelae of viral encephalitis ✓ G04.0 Acute disseminated encephalitis ✓ G04.2 Bacterial meningoencephalitis and meningomyelitis, not elsewhere classified ✓ G04.8 Other encephalitis, myelitis and encephalomyelitis ✓ G04.9 Encephalitis, myelitis, and encephalomyelitis, unspecified ✓ G05 Encephalitis, myelitis, and encephalomyelitis in diseases classified elsewhere ✓ G09 Sequelae of inflammatory diseases of central nervous system
6. Metabolic encephalopathies	<ul style="list-style-type: none"> ✓ E10.0 (Type I) ✓ E11.0 (Type II) ✓ E13.0 Other specified diabetes mellitus with coma ✓ E14.0 Unspecified diabetes mellitus with coma ✓ E15 Nondiabetic hypoglycaemic coma ✓ G92 Toxic encephalopathy ✓ G93.4 Encephalopathy, unspecified
7. Meningitis	<ul style="list-style-type: none"> ✓ A87 Viral meningitis ✓ B01.0 Varicella meningitis ✓ B37.5 Candidal meningitis ✓ G00 Bacterial meningitis, not elsewhere classified ✓ G01 Meningitis in bacterial diseases classified elsewhere ✓ G02 Meningitis in other infectious and parasitic diseases classified elsewhere ✓ G03 Meningitis due to other and unspecified causes
8. Other brain disorders and infections	<ul style="list-style-type: none"> ✓ G91.0 Communicating hydrocephalus ✓ G91.1 Obstructive hydrocephalus ✓ G91.2 Normal-pressure hydrocephalus ✓ G93.2 Benign intracranial hypertension ✓ G93.5 Compression of brain ✓ G93.6 Cerebral oedema ✓ G93.8 Other specified disorders of the brain (including post-radiation encephalopathy) ✓ G93.9 Disorder of the brain, unspecified ✓ G99.8 Other specified disorders of nervous system in diseases classified elsewhere ✓ R29.1 Meningismus