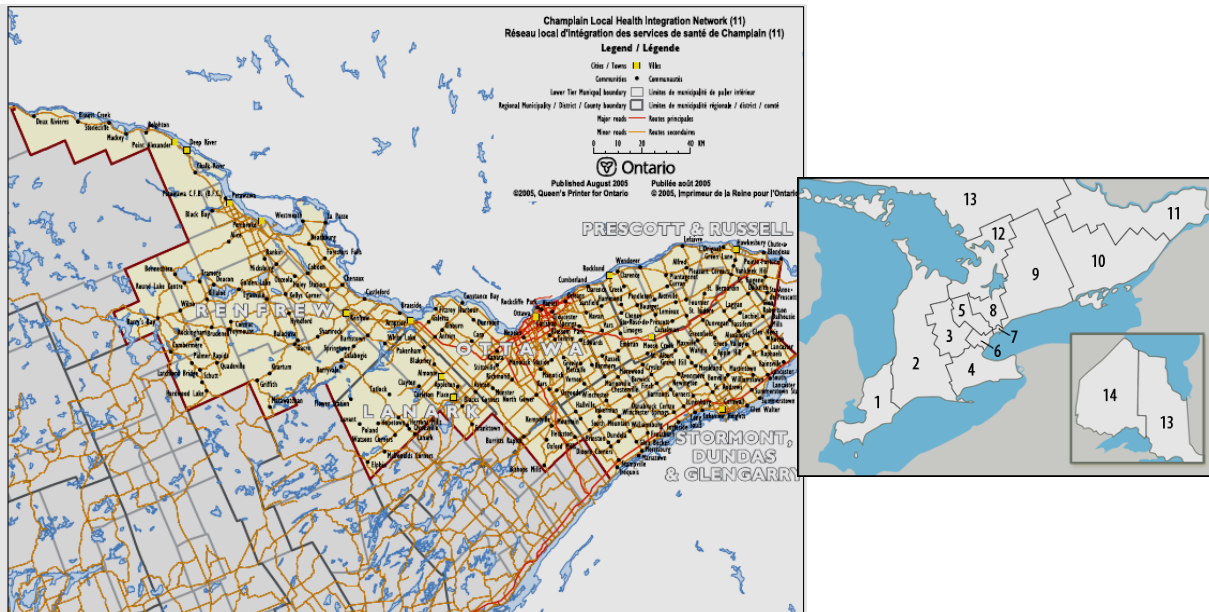


## Acquired Brain Injury by Local Health Integration Network in Ontario

### 11 Champlain



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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

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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](http://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	Champlain		Ontario	
	N	Col%	N	Col%
Overall	172	100	1,558	100
<b>Age</b>				
<19	0	0	<5	.
19 – 54	10	5.8	NR	.
55 – 64	15	8.7	128	8.2
65 – 74	25	14.5	168	10.8
75 – 84	52	30.2	520	33.4
85+	70	40.7	627	40.2
<b>Sex</b>				
Female	81	47.1	825	53.0
Male	91	52.9	733	47.0
<b>Fiscal Year of Discharge</b>				
2003/04	23	13.4	169	10.8
2004/05	19	11.0	186	11.9
2005/06	20	11.6	199	12.8
2006/07	27	15.7	221	14.2
2007/08	25	14.5	228	14.6
2008/09	20	11.6	264	16.9
2009/10	38	22.1	291	18.7
<b>Length of Stay in Acute Care</b>				
1 – 2	8	4.7	102	6.5
3 – 5	15	8.7	258	16.6
6 – 11	23	13.4	314	20.2
12+	126	73.3	884	56.7
<b>Charlson Comorbidity Index Score</b>				
0 – 1 (low)	127	73.8	1,168	75.0
2 - 3	33	19.2	311	20.0
4+ (high)	12	7.0	79	5.1
<b>Psychiatric Comorbidity</b>				
Yes	84	48.8	724	46.5
No	88	51.2	834	53.5
<b>Number of ALC Days</b>				
None	75	43.6	893	57.3
1 – 2	<5	.	32	2.1
3 – 5	<5	.	35	2.2
6 – 11	11	6.4	101	6.5

Characteristics	Champlain		Ontario	
	N	Col%	N	Col%
12+	80	46.5	497	31.9
<b>Number of Special Care Days</b>				
None	131	76.2	1,308	84.0
1 – 2	11	6.4	79	5.1
3 – 5	15	8.7	75	4.8
6 – 11	NR	.	51	3.3
12+	<5	.	45	2.9
<b>Motor Vehicle Collision</b>				
Yes	6	3.5	77	4.9
No	166	96.5	1,481	95.1
<b>Number of Previous ABI Admissions</b>				
0	132	76.7	1,135	72.8
1	29	16.9	315	20.2
2+	11	6.4	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	Champlain		Ontario	
	N	Col%	N	Col%
Overall	694	100	4,214	100
<b>Age</b>				
<19	0	0	<5	.
19 – 54	26	3.7	NR	.
55 – 64	60	8.6	397	9.4
65 – 74	105	15.1	755	17.9
75 – 84	276	39.8	1,619	38.4
85+	227	32.7	1,168	27.7
<b>Sex</b>				
Female	449	64.7	2,466	58.5
Male	245	35.3	1,748	41.5
<b>Fiscal Year of Discharge</b>				
2003/04	134	19.3	683	16.2
2004/05	136	19.6	688	16.3
2005/06	133	19.2	630	15.0
2006/07	85	12.2	582	13.8
2007/08	65	9.4	533	12.6
2008/09	85	12.2	569	13.5
2009/10	56	8.1	529	12.6
<b>Length of Stay in Acute Care</b>				
1 – 2	21	3.0	149	3.5
3 – 5	95	13.7	612	14.5
6 – 11	157	22.6	1,041	24.7
12+	421	60.7	2,412	57.2
<b>Charlson Comorbidity Index Score</b>				
0 – 1 (low)	315	45.4	1,832	43.5
2 – 3	222	32.0	1,406	33.4
4+ (high)	157	22.6	976	23.2
<b>Psychiatric Comorbidity</b>				
Yes	303	43.7	1,546	36.7
No	391	56.3	2,668	63.3
<b>Number of ALC Days</b>				
None	406	58.5	2,645	62.8
1 – 2	11	1.6	81	1.9
3 – 5	8	1.2	100	2.4
6 – 11	37	5.3	277	6.6
12+	232	33.4	1,111	26.4
<b>Number of Special Care Days</b>				
None	601	86.6	3,613	85.7
1 – 2	27	3.9	202	4.8
3 – 5	30	4.3	165	3.9
6 – 11	18	2.6	118	2.8

Characteristics	Champlain		Ontario	
	N	Col%	N	Col%
12+	18	2.6	116	2.8
<b>Number of Previous ABI Admissions</b>				
0	473	68.2	2,868	68.1
1	159	22.9	848	20.1
2+	62	8.9	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	Champlain		Ontario	
	N	Col%	N	Col%
Overall	282	100	3,248	100
<b>Age</b>				
<19	15	5.3	182	5.6
19 – 54	110	39.0	1,276	39.3
55 – 64	28	9.9	382	11.8
65 – 74	42	14.9	454	14.0
75 – 84	60	21.3	659	20.3
85+	27	9.6	295	9.1
<b>Sex</b>				
Female	101	35.8	1,144	35.2
Male	181	64.2	2,104	64.8
<b>Fiscal Year of Discharge</b>				
2003/04	32	11.3	375	11.5
2004/05	34	12.1	396	12.2
2005/06	34	12.1	423	13.0
2006/07	43	15.2	471	14.5
2007/08	52	18.4	522	16.1
2008/09	43	15.2	515	15.9
2009/10	44	15.6	546	16.8
<b>Length of Stay in Acute Care</b>				
1 – 2	0	0	22	0.7
3 – 5	9	3.2	159	4.9
6 – 11	47	16.7	642	19.8
12+	226	80.1	2,425	74.7
<b>Charlson Comorbidity Index Score</b>				
0 – 1 (low)	249	88.3	2,804	86.3
2 - 3	NR	.	389	12.0
4+ (high)	<5	.	55	1.7
<b>Psychiatric Comorbidity</b>				
Yes	79	28.0	667	20.5
No	203	72.0	2,581	79.5
<b>Number of ALC Days</b>				
None	132	46.8	1,669	51.4
1 – 2	24	8.5	232	7.1
3 – 5	18	6.4	281	8.7
6 – 11	35	12.4	456	14.0



Characteristics	Champlain		Ontario	
	N	Col%	N	Col%
12+	73	25.9	610	18.8
<b>Number of Special Care Days</b>				
None	111	39.4	1,429	44.0
1 – 2	24	8.5	351	10.8
3 – 5	26	9.2	376	11.6
6 – 11	45	16.0	423	13.0
12+	76	27.0	669	20.6
<b>Motor Vehicle Collision</b>				
Yes	79	28.0	1,003	30.9
No	203	72.0	2,245	69.1
<b>Number of Previous ABI Admissions</b>				
0	213	75.5	2,294	70.6
1	51	18.1	771	23.7
2+	18	6.4	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	Champlain		Ontario	
	N	Col%	N	Col%
Overall	526	100	4,936	100
<b>Age</b>				
<19	<5	.	51	1.0
19 – 54	126	24.0	1,325	26.8
55 – 64	98	18.6	931	18.9
65 – 74	107	20.3	1,060	21.5
75 – 84	143	27.2	1,193	24.2
85+	NR	.	376	7.6
<b>Sex</b>				
Female	268	51.0	2,293	46.5
Male	258	49.0	2,643	53.5
<b>Fiscal Year of Discharge</b>				
2003/04	58	11.0	605	12.3
2004/05	67	12.7	646	13.1
2005/06	89	16.9	697	14.1
2006/07	70	13.3	714	14.5
2007/08	90	17.1	714	14.5
2008/09	71	13.5	744	15.1
2009/10	81	15.4	816	16.5
<b>Length of Stay in Acute Care</b>				
1 – 2	<5	.	50	1.0
3 – 5	NR	.	271	5.5
6 – 11	103	19.6	1,037	21.0
12+	404	76.8	3,578	72.5
<b>Charlson Comorbidity Index Score</b>				
0 – 1 (low)	298	56.7	2,613	52.9
2 – 3	142	27.0	1,436	29.1
4+ (high)	86	16.3	887	18.0
<b>Psychiatric Comorbidity</b>				
Yes	125	23.8	836	16.9
No	401	76.2	4,100	83.1
<b>Number of ALC Days</b>				
None	275	52.3	2,660	53.9
1 – 2	49	9.3	399	8.1
3 – 5	56	10.6	460	9.3
6 – 11	54	10.3	639	12.9
12+	92	17.5	778	15.8
<b>Number of Special Care Days</b>				
None	293	55.7	2,710	54.9
1 – 2	41	7.8	627	12.7
3 – 5	61	11.6	482	9.8
6 – 11	55	10.5	436	8.8

Characteristics	Champlain		Ontario	
	N	Col%	N	Col%
12+	76	14.4	681	13.8
<b>Number of Previous ABI Admissions</b>				
0	327	62.2	2,848	57.7
1	105	20.0	1,322	26.8
2+	94	17.9	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	Champlain		Ontario	
	N	Col%	N	Col%
Overall	45	100	431	100
<b>Age</b>				
19 – 54	13	28.9	136	31.6
55 – 64	<5	.	49	11.4
65 – 74	NR	.	55	12.8
75 – 84	8	17.8	117	27.1
85+	12	26.7	74	17.2
<b>Sex</b>				
Female	25	55.6	183	42.5
Male	20	44.4	248	57.5
<b>Fiscal Year of Discharge</b>				
2003/04	7	15.6	70	16.2
2004/05	7	15.6	65	15.1
2005/06	6	13.3	57	13.2
2006/07	7	15.6	67	15.5
2007/08	12	26.7	63	14.6
2008/09	<5	.	68	15.8
2009/10	<5	.	41	9.5
<b>Length of Stay in Acute Care</b>				
1 – 2	0	0	6	1.4
3 – 5	<5	.	18	4.2
6 – 11	<5	.	67	15.5
12+	39	86.7	340	78.9
<b>Charlson Comorbidity Index Score</b>				
0 – 1 (low)	41	91.1	358	83.1
2 - 3	<5	.	61	14.2
4+ (high)	<5	.	12	2.8
<b>Psychiatric Comorbidity</b>				
Yes	11	24.4	97	22.5
No	34	75.6	334	77.5
<b>Number of ALC Days</b>				
None	21	46.7	210	48.7
1 – 2	<5	.	21	4.9

Characteristics	Champlain		Ontario	
	N	Col%	N	Col%
3 – 5	<5	.	28	6.5
6 – 11	9	20.0	65	15.1
12+	13	28.9	107	24.8
<b>Number of Special Care Days</b>				
None	15	33.3	187	43.4
1 – 2	<5	.	48	11.1
3 – 5	8	17.8	42	9.7
6 – 11	NR	.	50	11.6
12+	11	24.4	104	24.1
<b>Motor Vehicle Collision</b>				
Yes	13	28.9	120	27.8
No	32	71.1	311	72.2
<b>Number of Previous ABI Admissions</b>				
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	Champlain		Ontario	
	N	Col%	N	Col%
Overall	38	100	525	100
<b>Age</b>				
19 – 54	<5	.	135	25.7
55 – 64	7	18.4	74	14.1
65 – 74	<5	.	96	18.3
75 – 84	17	44.7	157	29.9
85+	6	15.8	63	12.0
<b>Sex</b>				
Female	26	68.4	268	51.0
Male	12	31.6	257	49.0
<b>Fiscal Year of Discharge</b>				
2003/04	7	18.4	82	15.6
2004/05	9	23.7	94	17.9
2005/06	<5	.	71	13.5
2006/07	<5	.	85	16.2
2007/08	10	26.3	65	12.4
2008/09	<5	.	70	13.3
2009/10	<5	.	58	11.0
<b>Length of Stay in Acute Care</b>				
1 – 2	0	0	13	2.5
3 – 5	NR	.	43	8.2
6 – 11	<5	.	81	15.4
12+	28	73.7	388	73.9
<b>Charlson Comorbidity Index Score</b>				
0 – 1 (low)	24	63.2	303	57.7
2 - 3	NR	.	170	32.4
4+ (high)	<5	.	52	9.9
<b>Psychiatric Comorbidity</b>				
Yes	13	34.2	113	21.5
No	25	65.8	412	78.5
<b>Number of ALC Days</b>				
None	19	50.0	279	53.1
1 – 2	<5	.	28	5.3
3 – 5	<5	.	45	8.6
6 – 11	<5	.	64	12.2
12+	8	21.1	109	20.8
<b>Number of Special Care Days</b>				
None	23	60.5	298	56.8
1 – 2	<5	.	44	8.4
3 – 5	<5	.	43	8.2
6 – 11	<5	.	49	9.3

Characteristics	Champlain		Ontario	
	N	Col%	N	Col%
12+	8	21.1	91	17.3
<b>Number of Previous ABI Admissions</b>				
0	26	68.4	394	75.0
1	NR	.	101	19.2
2+	<5	.	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	Champlain		Ontario	
	N	Col%	N	Col%
Overall	235	100	1,791	100
<b>Age</b>				
<19	<5	.	31	1.7
19 – 54	49	20.9	413	23.1
55 – 64	NR	.	206	11.5
65 – 74	31	13.2	255	14.2
75 – 84	63	26.8	464	25.9
85+	62	26.4	422	23.6
<b>Sex</b>				
Female	107	45.5	698	39.0
Male	128	54.5	1,093	61.0
<b>Fiscal Year of Discharge</b>				
2003/04	33	14.0	181	10.1
2004/05	35	14.9	204	11.4
2005/06	34	14.5	181	10.1
2006/07	30	12.8	233	13.0
2007/08	30	12.8	304	17.0
2008/09	29	12.3	335	18.7
2009/10	44	18.7	353	19.7
<b>Charlson Comorbidity Index Score</b>				
0 – 1 (low)	181	77.0	1,361	76.0
2 - 3	41	17.4	327	18.3
4+ (high)	13	5.5	103	5.8
<b>Psychiatric Comorbidity</b>				
Yes	113	48.1	747	41.7
No	122	51.9	1,044	58.3
<b>Number of Special Care Days</b>				
None	127	54.0	1,071	59.8
1 – 2	17	7.2	99	5.5
3 – 5	19	8.1	139	7.8
6 – 11	28	11.9	150	8.4
12+	44	18.7	332	18.5
<b>Motor Vehicle Collision</b>				
Yes	33	14.0	299	16.7



Characteristics	Champlain		Ontario	
	N	Col%	N	Col%
No	202	86.0	1,492	83.3
<b>Number of Previous ABI Admissions</b>				
0	175	74.5	1,215	67.8
1	43	18.3	462	25.8
2+	17	7.2	114	6.4
<b>Discharge Destination <sup>1</sup></b>				
Death	21	8.9	135	7.5
Home	55	23.4	378	21.1
Inpatient Rehabilitation	62	26.4	479	26.7
Long Term Care	76	32.3	442	24.7
Transferred <sup>2</sup>	20	8.5	350	19.5

**Note:** NR = not reportable due to small cell size

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

<sup>2</sup> 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	Champlain		Ontario	
	N	Col%	N	Col%
Overall	569	100	4,662	100
<b>Age</b>				
<19	<5	.	16	0.3
19 – 54	NR	.	812	17.4
55 – 64	83	14.6	771	16.5
65 – 74	97	17.0	1,019	21.9
75 – 84	193	33.9	1,425	30.6
85+	117	20.6	619	13.3
<b>Sex</b>				
Female	318	55.9	2,260	48.5
Male	251	44.1	2,402	51.5
<b>Fiscal Year of Discharge</b>				
2003/04	108	19.0	648	13.9
2004/05	93	16.3	554	11.9
2005/06	98	17.2	585	12.5
2006/07	73	12.8	645	13.8
2007/08	67	11.8	718	15.4
2008/09	62	10.9	760	16.3
2009/10	68	12.0	752	16.1
<b>Charlson Comorbidity Index Score</b>				
0 – 1 (low)	201	35.3	1,571	33.7
2 - 3	185	32.5	1,423	30.5
4+ (high)	183	32.2	1,668	35.8
<b>Psychiatric Comorbidity</b>				
Yes	258	45.3	1,491	32.0
No	311	54.7	3,171	68.0
<b>Number of Special Care Days</b>				
None	419	73.6	3,309	71.0
1 – 2	24	4.2	226	4.8
3 – 5	32	5.6	257	5.5
6 – 11	35	6.2	297	6.4
12+	59	10.4	573	12.3
<b>Number of Previous ABI Admissions</b>				
0	363	63.8	2,837	60.9
1	132	23.2	1,151	24.7
2+	74	13.0	674	14.5
<b>Discharge Destination <sup>1</sup></b>				
Death	109	19.2	1,054	22.6
Home	92	16.2	780	16.7
Inpatient Rehabilitation	74	13.0	599	12.8
Long Term Care	209	36.7	973	20.9

Characteristics	Champlain		Ontario	
	N	Col%	N	Col%
Transferred <sup>2</sup>	85	14.9	1,241	26.6

**Note:** NR = not reportable due to small cell size

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

<sup>2</sup> 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 75<sup>th</sup> percentile and higher.

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

Characteristics	Champlain		Ontario	
	N	Col%	N	Col%
Overall	1,006	100	9,399	100
<b>Age</b>				
<19	74	7.4	912	9.7
19 – 54	283	28.1	2,822	30.0
55 – 64	92	9.1	958	10.2
65 – 74	138	13.7	1,266	13.5
75 – 84	249	24.8	2,059	21.9
85+	170	16.9	1,382	14.7
<b>Sex</b>				
Female	386	38.4	3,454	36.7
Male	620	61.6	5,945	63.3
<b>Fiscal Year of Discharge</b>				
2003/04	135	13.4	1,169	12.4
2004/05	140	13.9	1,296	13.8
2005/06	133	13.2	1,269	13.5
2006/07	130	12.9	1,286	13.7
2007/08	154	15.3	1,407	15.0
2008/09	147	14.6	1,414	15.0
2009/10	167	16.6	1,558	16.6
<b>Charlson Comorbidity Index Score</b>				
0 – 1 (low)	785	78.0	7,539	80.2
2 - 3	159	15.8	1,437	15.3
4+ (high)	62	6.2	423	4.5
<b>Psychiatric Comorbidity</b>				
Yes	387	38.5	2,948	31.4
No	619	61.5	6,451	68.6
<b>Number of ALC Days</b>				
None	570	56.7	5,545	59.0
1 – 2	34	3.4	256	2.7
3 – 5	37	3.7	433	4.6
6 – 11	103	10.2	1,005	10.7
12+	262	26.0	2,160	23.0
<b>Number of Special Care Days</b>				
None	435	43.2	4,529	48.2
1 – 2	81	8.1	730	7.8

Characteristics	Champlain		Ontario	
	N	Col%	N	Col%
3 – 5	99	9.8	1,052	11.2
6 – 11	138	13.7	1,248	13.3
12+	253	25.1	1,840	19.6
<b>Motor Vehicle Collision</b>				
Yes	235	23.4	2,203	23.4
No	771	76.6	7,196	76.6
<b>Number of Previous ABI Admissions</b>				
0	765	76.0	6,706	71.3
1	178	17.7	2,097	22.3
2+	63	6.3	596	6.3
<b>Discharge Destination <sup>1</sup></b>				
Death	97	9.6	890	9.5
Home	449	44.6	3,641	38.7
Inpatient Rehabilitation	212	21.1	2,303	24.5
Long Term Care	123	12.2	851	9.1
Transferred <sup>2</sup>	122	12.1	1,677	17.8

**Note:** <sup>1</sup> Missing values were excluded and thus, column percentages may not add up to 100%

<sup>2</sup> 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	Champlain		Ontario	
	N	Col%	N	Col%
Overall	3,925	100	29,710	100
<b>Age</b>				
<19	252	6.4	2,315	7.8
19 – 54	753	19.2	6,357	21.4
55 – 64	691	17.6	5,387	18.1
65 – 74	836	21.3	6,511	21.9
75 – 84	980	25.0	6,807	22.9
85+	413	10.5	2,333	7.9
<b>Sex</b>				
Female	2,020	51.5	14,355	48.3
Male	1,905	48.5	15,355	51.7
<b>Fiscal Year of Discharge</b>				
2003/04	662	16.9	4,445	15.0
2004/05	614	15.6	4,273	14.4
2005/06	604	15.4	4,294	14.5
2006/07	488	12.4	4,039	13.6
2007/08	523	13.3	4,045	13.6
2008/09	504	12.8	4,251	14.3
2009/10	530	13.5	4,363	14.7
<b>Charlson Comorbidity Index Score</b>				
0 – 1 (low)	1,271	32.4	10,238	34.5
2 – 3	1,041	26.5	8,033	27.0
4+ (high)	1,613	41.1	11,439	38.5
<b>Psychiatric Comorbidity</b>				
Yes	1,093	27.8	6,413	21.6
No	2,832	72.2	23,297	78.4
<b>Number of ALC Days</b>				
None	2,831	72.1	20,085	67.6
1 – 2	62	1.6	644	2.2
3 – 5	126	3.2	1,008	3.4
6 – 11	224	5.7	2,285	7.7
12+	682	17.4	5,688	19.1
<b>Number of Special Care Days</b>				
None	2,604	66.3	18,596	62.6
1 – 2	222	5.7	1,958	6.6
3 – 5	269	6.9	2,025	6.8
6 – 11	357	9.1	2,454	8.3
12+	473	12.1	4,677	15.7
<b>Number of Previous ABI Admissions</b>				
0	2,342	59.7	18,246	61.4
1	916	23.3	6,867	23.1
2+	667	17.0	4,597	15.5

Characteristics	Champlain		Ontario	
	N	Col%	N	Col%
<b>Discharge Destination <sup>1</sup></b>				
Death	1,047	26.7	7,645	25.7
Home	1,674	42.6	11,618	39.1
Inpatient Rehabilitation	344	8.8	2,930	9.9
Long Term Care	354	9.0	2,027	6.8
Transferred <sup>2</sup>	503	12.8	5,418	18.2

**Note:** <sup>1</sup> Missing values were excluded and thus, column percentages may not add up to 100%

<sup>2</sup> 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	Champlain (N = 2,678)		Ontario (N = 30,579)	
	N	Col%	N	Col%
Overall	91	100	1,220	100
<b>Age</b>				
<19	14	15.4	199	16.3
19 – 54	30	33.0	386	31.6
55 – 64	11	12.1	144	11.8
65 – 74	12	13.2	160	13.1
75 – 84	18	19.8	235	19.3
85+	6	6.6	96	7.9
<b>Sex</b>				
Female	34	37.4	360	29.5
Male	57	62.6	860	70.5
<b>Fiscal Year of Discharge</b>				
2003/04	12	13.2	163	13.4
2004/05	24	26.4	238	19.5
2005/06	15	16.5	224	18.4
2006/07	12	13.2	190	15.6
2007/08	15	16.5	186	15.2
2008/09	13	14.3	219	18.0
<b>Length of Stay in Acute Care</b>				
1 – 2	16	17.6	194	15.9
3 – 5	22	24.2	410	33.6
6 – 11	17	18.7	282	23.1
12+	36	39.6	334	27.4
<b>Charlson Comorbidity Index Score</b>				
0 – 1 (low)	82	90.1	1,068	87.5
2 - 3	NR	.	124	10.2
4+ (high)	<5	.	28	2.3
<b>Psychiatric Comorbidity</b>				
Yes	22	24.2	277	22.7
No	69	75.8	943	77.3
<b>Number of ALC Days</b>				
None	79	86.8	1,099	90.1
1 – 2	<5	.	22	1.8
3 – 5	<5	.	18	1.5
6 – 11	<5	.	28	2.3
12+	<5	.	53	4.3



Characteristics	Champlain (N = 2,678)		Ontario (N = 30,579)	
	N	Col%	N	Col%
<b>Number of Special Care Days</b>				
None	56	61.5	867	71.1
1 – 2	18	19.8	170	13.9
3 – 5	8	8.8	86	7.0
6 – 11	<5	.	53	4.3
12+	NR	.	44	3.6
<b>Motor Vehicle Collision</b>				
Yes	8	8.8	164	13.4
No	83	91.2	1,056	86.6
<b>Number of Previous ABI Admissions</b>				
0	9	9.9	76	6.2
1	53	58.2	755	61.9
2+	29	31.9	389	31.9
<b>Discharge Destination <sup>1</sup></b>				
Home	72	79.1	911	74.7
Inpatient Rehabilitation	12	13.2	111	9.1
Long Term Care	<5	.	54	4.4
Transferred <sup>2</sup>	<5	.	142	11.6

**Note:** NR = not reportable due to small cell size

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

<sup>2</sup> 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	Champlain (N = 11,412)		Ontario (N = 97,700)	
	N	Col%	N	Col%
Overall	967	100	9,300	100
<b>Age</b>				
<19	137	14.2	1,569	16.9
19 – 54	284	29.4	2,688	28.9
55 – 64	212	21.9	1,904	20.5
65 – 74	193	20.0	1,794	19.3
75 – 84	114	11.8	1,144	12.3
85+	27	2.8	201	2.2
<b>Sex</b>				
Female	450	46.5	4,165	44.8
Male	517	53.5	5,135	55.2
<b>Fiscal Year of Discharge</b>				
2003/04	174	18.0	1,562	16.8
2004/05	176	18.2	1,492	16.0
2005/06	156	16.1	1,561	16.8
2006/07	154	15.9	1,578	17.0
2007/08	133	13.8	1,553	16.7
2008/09	174	18.0	1,554	16.7
<b>Length of Stay in Acute Care</b>				
1 – 2	104	10.8	1,169	12.6
3 – 5	266	27.5	2,928	31.5
6 – 11	319	33.0	2,747	29.5
12+	278	28.7	2,456	26.4
<b>Charlson Comorbidity Index Score</b>				
0 – 1 (low)	246	25.4	2,425	26.1
2 - 3	215	22.2	2,642	28.4
4+ (high)	506	52.3	4,233	45.5
<b>Psychiatric Comorbidity</b>				
Yes	84	8.7	666	7.2
No	883	91.3	8,634	92.8
<b>Number of ALC Days</b>				
None	927	95.9	8,812	94.8
1 – 2	9	0.9	73	0.8
3 – 5	6	0.6	97	1.0
6 – 11	14	1.4	145	1.6
12+	11	1.1	173	1.9
<b>Number of Special Care Days</b>				
None	791	81.8	7,802	83.9
1 – 2	88	9.1	921	9.9
3 – 5	47	4.9	324	3.5
6 – 11	23	2.4	152	1.6
12+	18	1.9	101	1.1

Characteristics	Champlain (N = 11,412)		Ontario (N = 97,700)	
	N	Col%	N	Col%
<b>Number of Previous ABI Admissions</b>				
0	15	1.6	92	1.0
1	321	33.2	3,220	34.6
2+	631	65.3	5,988	64.4
<b>Discharge Destination <sup>1</sup></b>				
Home	861	89.0	8,234	88.5
Inpatient Rehabilitation	29	3.0	303	3.3
Long Term Care	21	2.2	146	1.6
Transferred <sup>2</sup>	55	5.7	611	6.6

**Note:** <sup>1</sup> Missing values were excluded and thus, column percentages may not add up to 100%

<sup>2</sup> 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"> <li>✓ S02.0 Fracture of vault of skull</li> <li>✓ S02.1 Fracture of base of skull</li> <li>✓ S02.3 Fracture of the orbital floor</li> <li>✓ S02.7 Multiple fractures involving skull and facial bones</li> <li>✓ S02.8 Fractures of other skull and facial bones</li> <li>✓ S02.9 Fractures of skull and facial bones, part unspecified</li> <li>✓ S07.1 Crushing injury of skull</li> </ul>
2. Intracranial injury, excluding those with skull fracture	<ul style="list-style-type: none"> <li>✓ S06.0 Concussion</li> <li>✓ S06.1 Traumatic cerebral oedema</li> <li>✓ S06.2 Diffuse brain injury</li> <li>✓ S06.3 Focal brain injury</li> <li>✓ S06.4 Epidural hemorrhage</li> <li>✓ S06.5 Traumatic subdural hemorrhage</li> <li>✓ S06.6 Traumatic subarachnoid hemorrhage</li> <li>✓ S06.7 Intracranial injury with prolonged coma</li> <li>✓ S06.8 Other intracranial injuries</li> <li>✓ S06.9 Intracranial injury, unspecified</li> </ul>
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"> <li>✓ F07.2 Post concussion syndrome</li> <li>✓ T90.2 Sequelae of fracture of skull and facial bones</li> <li>✓ T90.5 Sequelae of intracranial injury</li> </ul>

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

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