

Drip-and-ship or motherhip for optimal use of endovascular therapy: real-world evidence from Québec

L. Lambert¹, L. Azzi¹, C. Odier², R. Côté³, E. Segal⁴, L. Beaudet², M-C. Camden⁵, H. Corriveau⁶, C. Lehoux⁷, F. Moreau⁸, F. Rivest⁹, M. Beaudry¹⁰, G. Milot³, J-M. Boulanger¹¹, L. Boothroyd¹, M. Vutcovici Nicolae¹, M. de Guise¹

1. Institut d'excellence en santé et en services sociaux (INESSS), Québec; 2. Centre hospitalier de l'Université de Montréal, Québec; 3. Hôpital général de Montréal, Québec; 4. Hôpital général juif et Corporation d'Urgences-santé, Montréal, Québec; 5. Centre hospitalier universitaire de Québec, Québec; 6. Université de Sherbrooke, Québec; 7. Centre hospitalier régional de Trois-Rivières, Québec; 8. Centre hospitalier universitaire de Sherbrooke, Québec; 9. Centre de santé et de services sociaux de Chicoutimi, Québec; 10. Centre intégré universitaire de santé et de services sociaux du Saguenay-Lac-St-Jean, Québec; 11. Hôpital Charles-Lemoyne, Québec.

BACKGROUND

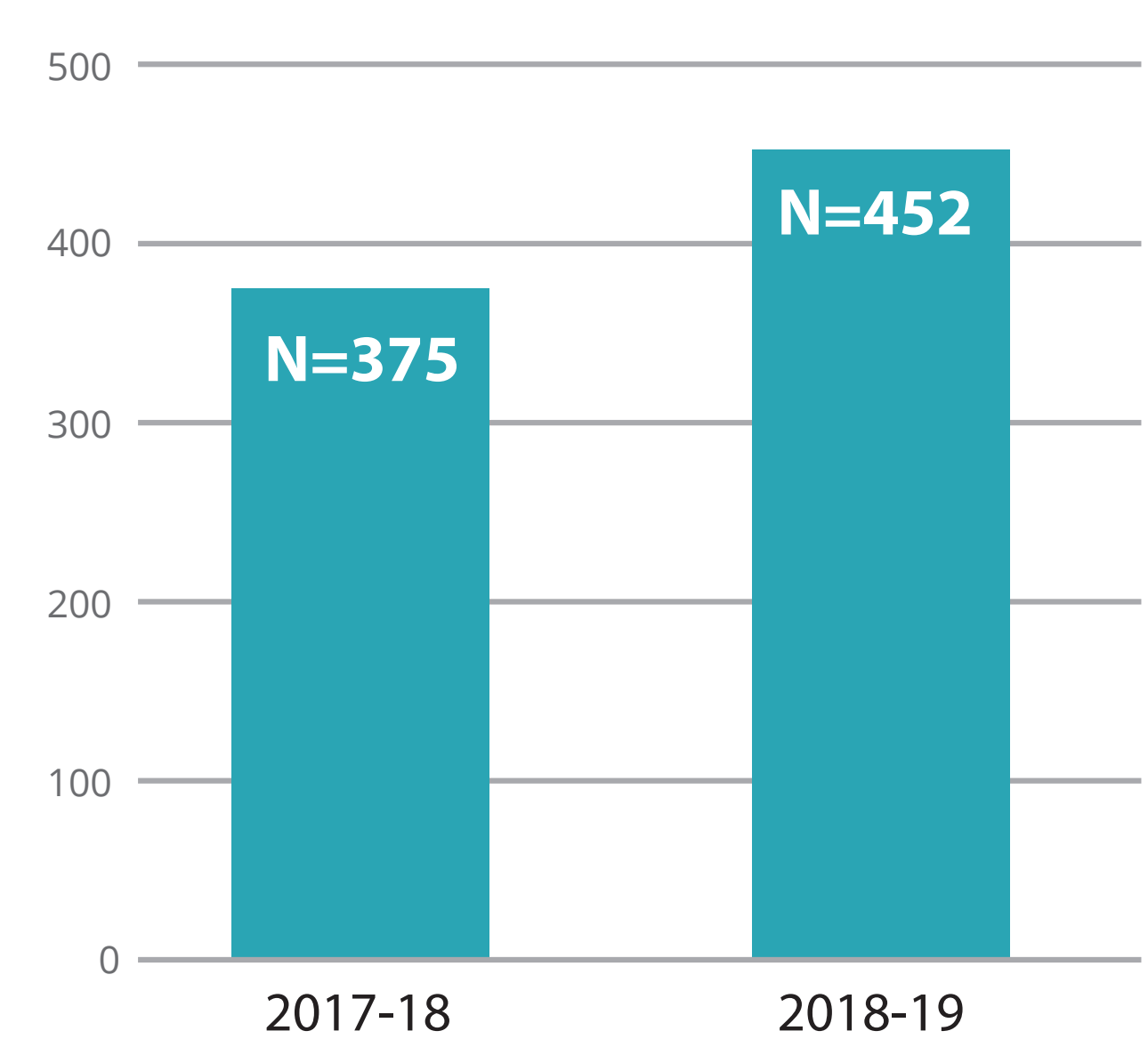
The efficacy of endovascular therapy for stroke (EVT) depends on the timeliness of access to the intervention from the start of symptoms.

In Québec, a province-wide field evaluation is providing information about processes of care and the delays associated with different patient pathways. Herein we compare results for drip-and-ship (transferred patients) and motherhip (direct admissions to EVT centres) in the province of Québec.

METHODS

Data were collected for all patients treated with EVT in any of Québec's EVT centres active during 2017-18 or 2018-19. Each clinical team collaborated with a designated medical archivist from INESSS to facilitate data entry into a secure, centralized website.

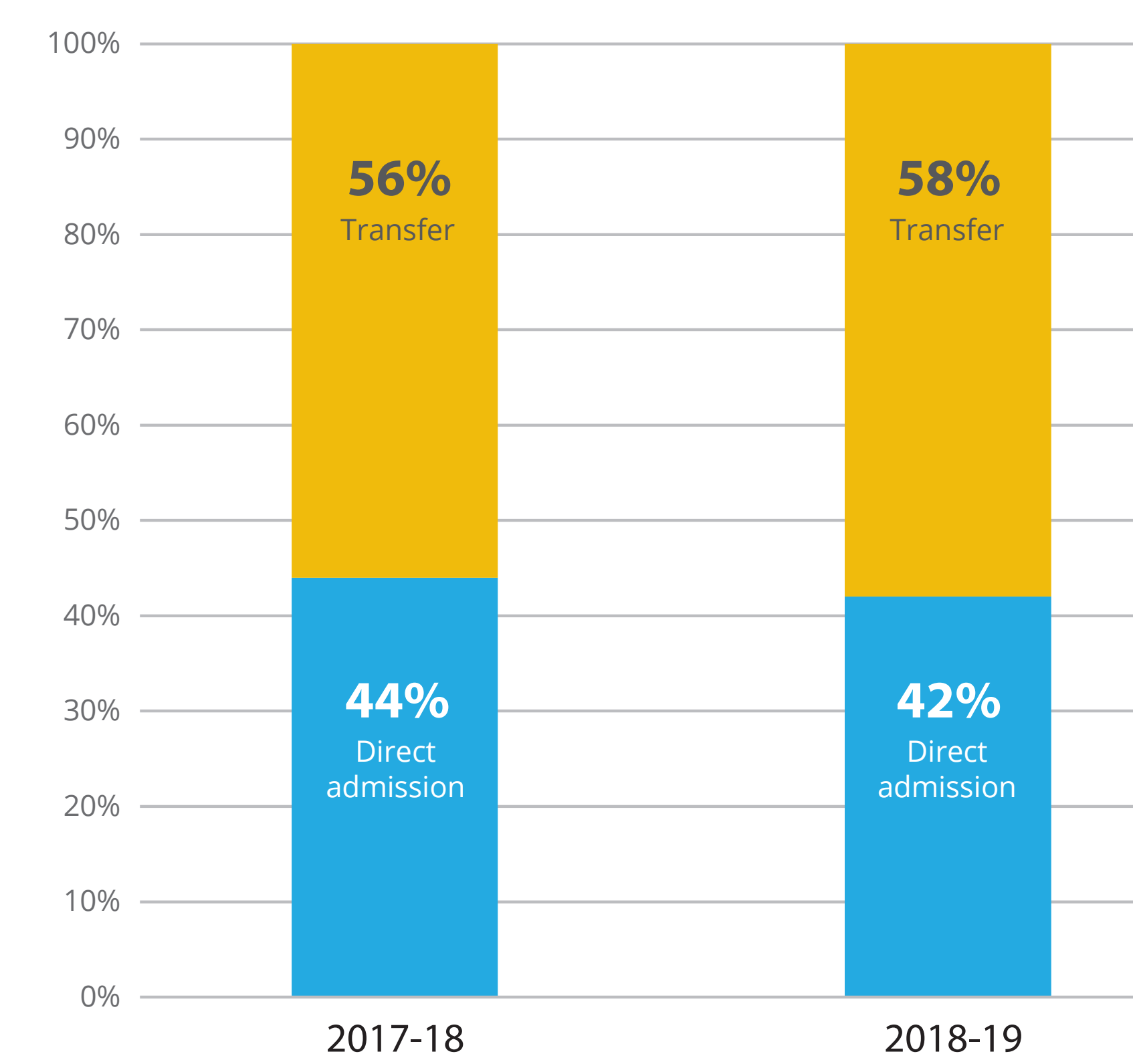
NUMBER OF EVT PERFORMED IN QUÉBEC (2017-18 VS 2018-19)



Compared with 2017-18, there was a 21% increase in the number of patients treated with EVT in 2018-19, in Québec.

RESULTS

MOTHERSHIP VS DRIP AND SHIP, BY YEAR



Patient trajectory	2017-18 N=375 EVT	2018-19 N=452 EVT
Direct admission EVT with t-PA	27%	27%
Direct admission EVT without t-PA	17%	15%
Transfer EVT without t-PA	22%	25%
Transfer EVT with t-PA in NT centre	32%	30%
Transfer EVT with t-PA in EVT centre	2%	2%

In both 2017-18 and 2018-19:

- the majority of patients treated with EVT were transferred in from a referral (NT) centre
- a substantial proportion of transferred patients did not receive t-PA prior to departure from the referral (NT) centre

PATIENT CHARACTERISTICS BY TYPE OF ADMISSION AND YEAR

	2017-18 N=375		2018-19 N=452	
	Drip and ship N=209 EVT	Motherhip N=166 EVT	Drip and ship N=261 EVT	Motherhip N=191 EVT
Median age	70 years	72 years	70 years	75 years
Female	50%	51%	53%	53%
Median NIHSS score	15	16	16	17
% NIHSS ≥ 6	91%	95%	95%	97%
% ASPECTS ≥ 6	94%	97%	89%	98%
% mRankin ≤ 2	94%	93%	91%	95%

Compared to EVT patients treated after an interhospital transfer, those treated after direct admission to an EVT centre had similar clinical characteristics but tended to be older.

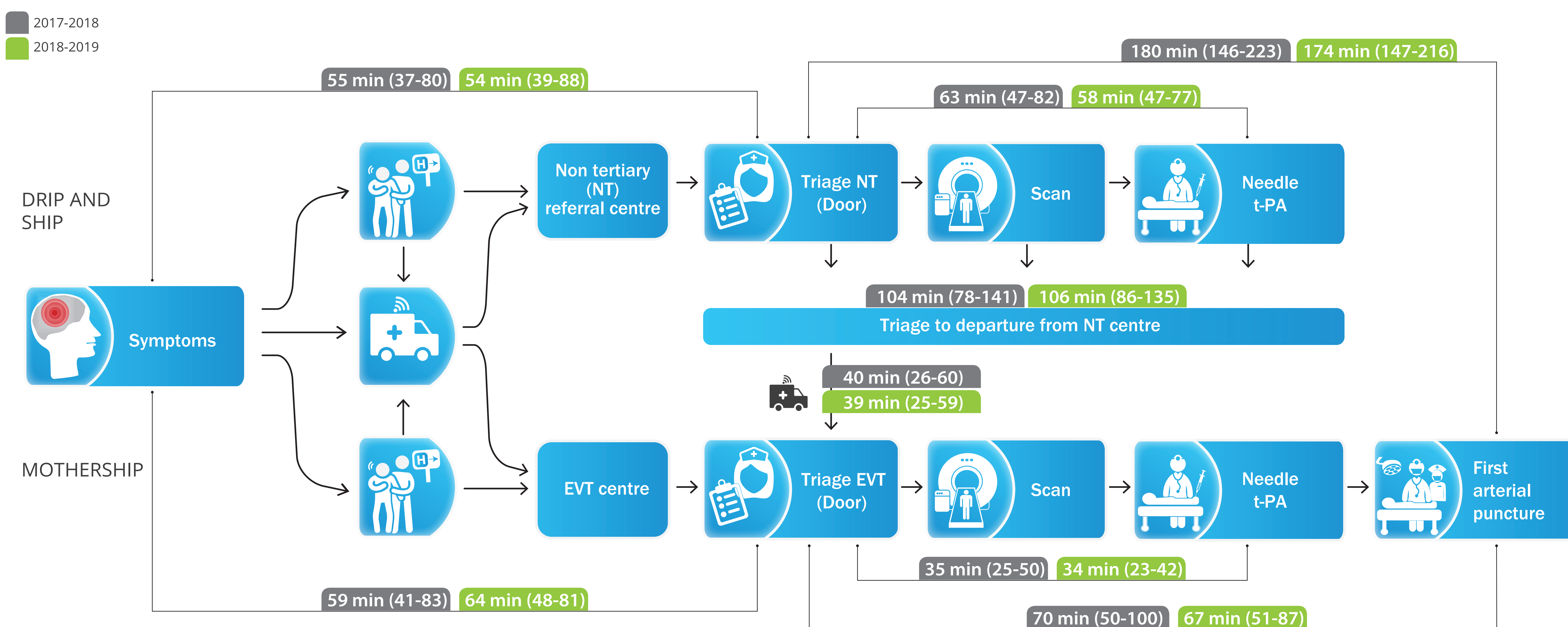
CLINICAL OUTCOMES OF EVT POST-PROCEDURE, AT EVT HOSPITAL DISCHARGE AND AT 90 DAYS (% OF PATIENTS)

	2017-18		2018-19	
	Drip and ship N=209 EVT	Motherhip N=166 EVT	Drip and ship N=261 EVT	Motherhip N=191 EVT
mTICI ≥ 2b post-EVT	86%	85%	88%	92%
Destination at EVT hospital discharge				
In-hospital mortality	10%	13%	7%	10%
Home	9%	31%	12%	39%
Interhospital transfer	81%	56%	81%	51%
Documentation at EVT hospital discharge				
NIHSS score*	64%		78%	
Modified Rankin*	48%		53%	
Documentation of modified Rankin at 90 days*				
	54%		50%	

The evaluation of EVT treatment outcomes in Québec is limited by a lack of information for patients transferred-out to another hospital after EVT and a lack of documentation by clinical teams of NIHSS and modified Rankin scores.

* Patients who died were included in the denominator and assumed to have documentation.

PATIENT TRAJECTORIES AND ASSOCIATED DELAYS (MEDIAN, INTER-QUARTILE RANGE) FOR EVT TREATMENT IN QUÉBEC (2017-18 VS 2018-19)



- In Québec, the delay from start of symptoms to triage at the first hospital was very similar for transfer-in and direct admission patients.
- However, patients treated with EVT after interhospital transfer experienced long delays in the referring centre.
- Compared to patients admitted directly to an EVT centre, the median delay from first-door-to-puncture was more than 100 minutes longer for interhospital transfer patients.

CONCLUSION

- This real-world evidence indicates that a substantial proportion of EVT patients in Québec are transferred from a referral centre and experience longer treatment delays than those admitted directly to an EVT centre.
- The more recent results from 2018-19 provide further support for the development of protocols that favour transport by ambulance, of patients suspected to have had a major ischemic stroke, directly to the closest EVT centre.