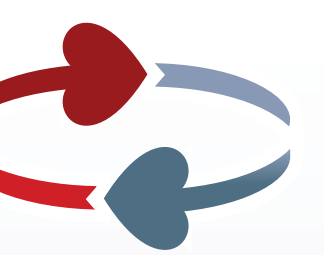


Organ donation by trauma and non-trauma patients in a Canadian province: a retrospective analysis



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Introduction

- Organ donation (OD) rates are consistently below those needed to meet the demand from patients with end-stage organ failure.
- Although trauma victims represent a significant pool of potential organ donors (PODs), the epidemiology of OD by trauma patients in Canada is poorly understood.
- Our primary objective was to describe OD by trauma and non-trauma patients in Nova Scotia.
- As a secondary objective, we sought to evaluate reasons for non-donation.

Methods

- We performed a retrospective cohort study by linking data from the Nova Scotia Trauma Registry (NSTR) and the Nova Scotia Legacy of Life Donor Registry (LLDR).
- NSTR inclusion criteria: Trauma patients in Nova Scotia injured between 2009-2016 and who received mechanical ventilation, had an appropriate ICD-10-CA injury code, and died in hospital.
- LLDR inclusion criteria: All patients referred for organ donation (i.e., trauma and non-trauma patients).
- Data elements collected included demographics, patient and injury characteristics, information on organ donation, and reasons for non-donation.
- Data analysis: We used descriptive statistics, Student's t-tests, chi square analysis, and Fisher's exact test as appropriate.
- We calculated conversion rates (i.e., # actual donors divided by # eligible donors) and consent rates (i.e., # of PODs with consent obtained divided by # PODs who were approached for consent).

Results

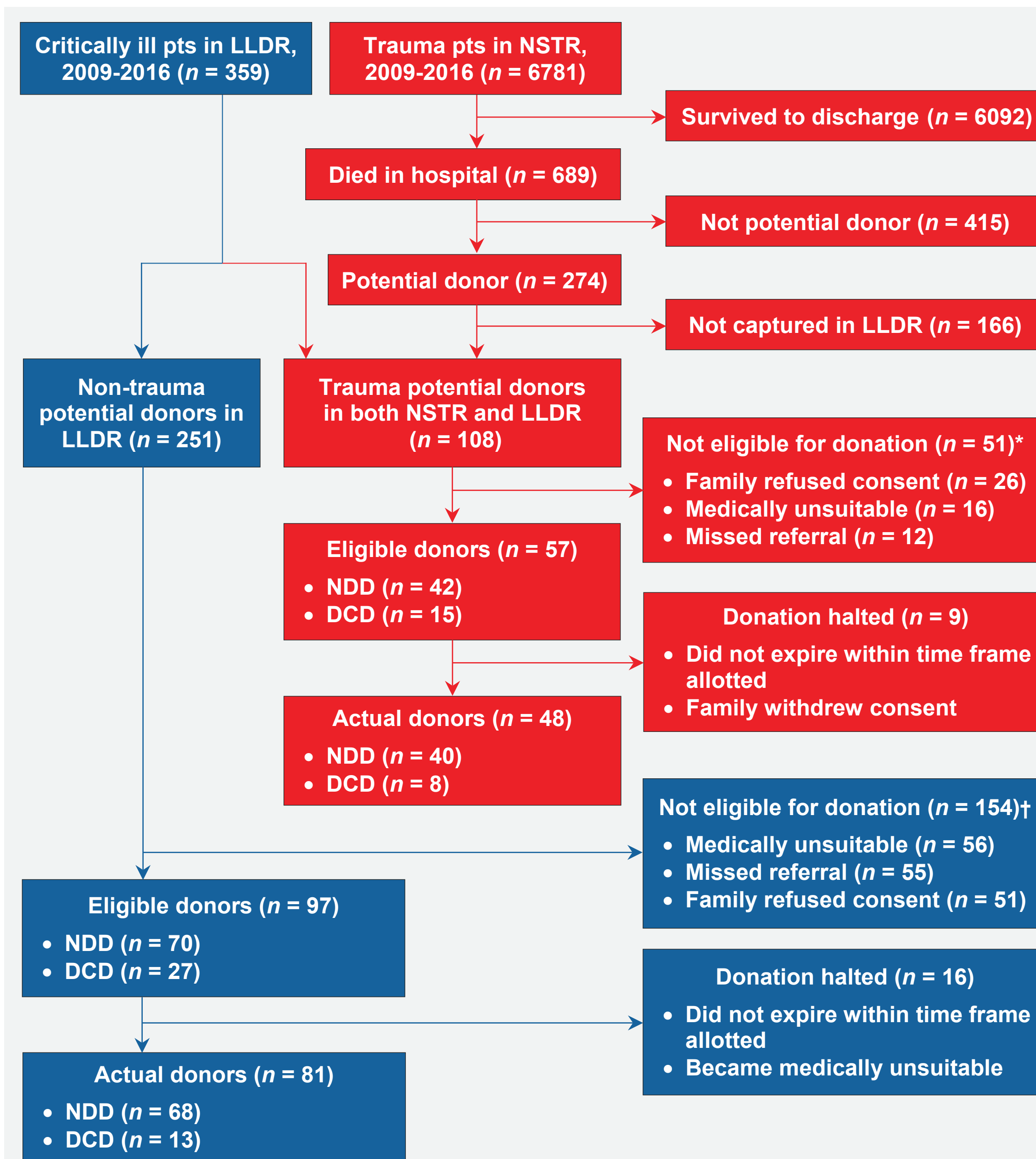


Figure 1: Organ donation in Nova Scotia, 2009-2016. NSTR: Nova Scotia Trauma Registry; LLDR: Nova Scotia Legacy of Life Donor Registry; NDD: neurological determination of death; DCD: donation after circulatory death. †8 patients were ineligible for more than 1 reason.

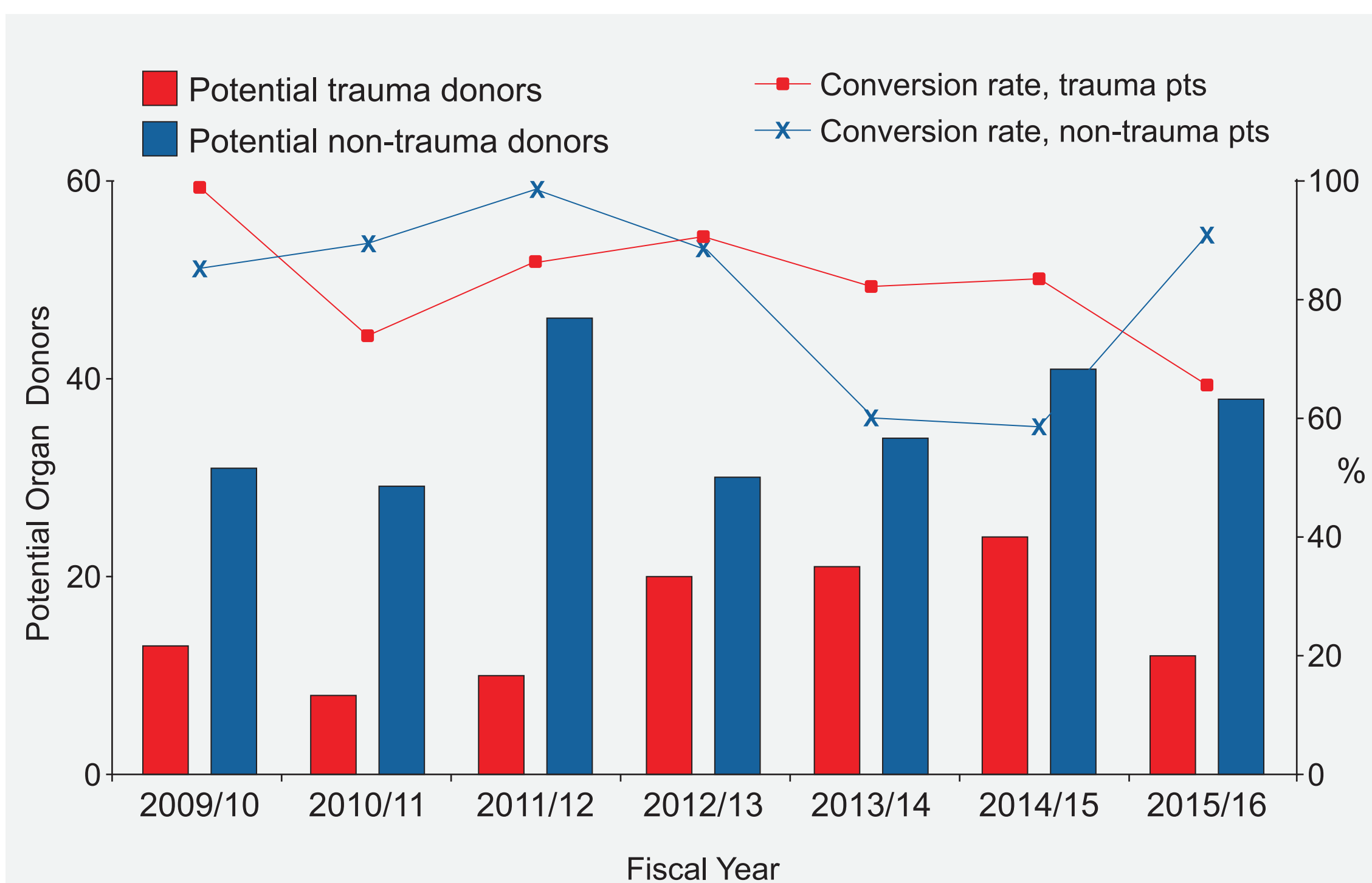


Figure 2: Number of potential organ donors and conversion rates by fiscal year. Conversion rate was defined as proportion of eligible donors who became actual donors. Criteria for a potential donor was a patient who met the following four criteria: 1) GCS \geq 5T (2009-2013) or grave prognosis or GCS \geq 5T (2014-2016); 2) irreversible brain injury (2009-2013) or injured brain or non-recoverable injury or illness (2014-2016); 3) patient intubated and ventilator-dependent; and 4) end of life discussion held with family and decision made to withdraw life sustaining therapy.

- Of all trauma-related in-hospital deaths, 40% (274/689) met NSTR definition of a POD; 7% (48/689) donated.
- Potential donors were younger, more likely to be male.
- Trauma PODs: higher mean ISS scores, higher mean AIS Head scores, and lower mean scene GCS scores compared to trauma non-PODs.
- Conversion rates: 84% (48/57) for trauma patients, 84% (81/97) for non-trauma patients.
- Consent rates: 69% (57/83) and 66% (97/148) in trauma and non-trauma patients, respectively.
- Trauma donors were younger than non-trauma donors and more likely to be male.
- Most donated following neurological determination of death trauma 83%; non-trauma 84%
- Trauma patients donated 4.23 organs/donor, non-trauma patients donated 4.14 organs/donor.
- Most common reasons for non-donation were refusal of consent by the family and medical unsuitability.

Table 1: Reasons for non-donation in potential organ donors who were or were not referred to the Legacy of Life Program

Reason*	Trauma PODs n = 60	Non-trauma PODs n = 170	p-value
Medically unsuitable, n (%)	23 (38)	70 (41)	0.70
Not declarable	9 (15)	26 (15)	0.96
Age†	7 (12)	22 (13)	0.80
Did not expire within time frame allotted‡	7 (12)	14 (8)	0.43
Others	5 (8)	27 (16)	0.15
Unknown	n < 5	7 (4)	0.79
Family refused consent, n (%)	28 (46)	51 (30)	0.019
Wait time for donation process	11 (18)	8 (5)	<0.001
Family belief	8 (13)	14 (8)	0.25
Unknown	9 (15)	26 (15)	0.95
Missed referral	12 (20)	55 (32)	0.07
Medically unsuitable	6 (10)	29 (17)	0.19
Family refused consent or not approached	n < 5	0 (0)	0.09
Unknown	5 (8)	26 (15)	0.17

POD: potential organ donor. *Some patients did not become organ donors for more than 1 reason. †Age limit for DCD was <55 years prior to June 2010 and <65 years after June 2010. ‡Time frame was 2 hours following withdrawal of life support. §Other reasons included cancer, multi-organ failure, hepatitis, sepsis, renal failure.

Discussion

- Of all trauma-related deaths in provincial hospitals, 40% were identified as PODs and 7% successfully donated organs (most as NDD donors).
- Trauma victims who were PODs tended to be more severely injured compared to those who were non-PODs.
- Despite having an 84% conversion rate in both trauma and non-trauma patients, the majority of PODs did not successfully donate organs.
- 37% of all PODs in the LLDR had signed their MSI card indicating their intent to donate, yet the majority of these willing patients did not become donors.
- While most of these willing patients did not donate due to medical unsuitability or missed referral, 20% of these patients ultimately failed to donate because their families overrode their wishes and refused to provide consent.

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Disclosure

I **do not** have any involvement with industry that may be perceived to influence the content of this presentation. I **do not** have any barriers to practice change implementation to report.