
# *Assessing Prehospital Cervical Spine Care with a Protocol including Lanyards rather than Routine Use of Rigid Immobilisation Collars*

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# *Assessing Prehospital Cervical Spine Care with a Protocol including Lanyards Rather than Routine Use of Rigid Immobilisation Collars*

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# Cervical spine injury

- Cervical spine injury is present in 2-4% of trauma presentations
  - Spinal cord injury is present in up to 20% of these
    - 0.4-0.7% of trauma presentations
- Although rare, neurological impairment is a devastating injury

# Evidence for traditional use of collars

- There is little to no evidence that the use of rigid immobilization devices of the cervical spine improve neurological outcomes
  - Introduced through protocolization (ATLS) in 1960's
  - Biomechanical studies
- Rigid cervical spine immobilization devices may cause significant harm
  - In penetrating trauma NNT is 1032 vs NNH 66[2]
  - In blunt trauma low likelihood of preventing neurological adverse outcomes[3]

# Denmark National Prehospital Spinal Care Guidelines (Maschmann et al. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine (2019) 27:77)

**Table 3** Summary of main recommendations, quality of evidence and strength of recommendation

| Recommendation | Quality of evidence | Strength of recommendation |
|---|---|---|
| Adult trauma patients should not undergo spinal stabilisation with a rigid cervical collar | very low | weak |
| Adult trauma patients should not undergo spinal stabilisation on a hard backboard unless in case of time-critical ABCDE-unstable patients, where other spinal stabilisation measures would be more time consuming | very low | weak |
| Adult ABCDE-stable patients with neurologic deficit and / or osseous spinal pain on examination should undergo spinal stabilisation in a vacuum mattress | very low | weak |
| Adult trauma patients with isolated penetrating injury should not undergo spinal stabilisation | moderate | strong |
| Our triaging tool should be used in order to facilitate decision on spinal stabilisation | none | good clinical practice |

# Recent international trends

EMA Emergency Medicine Australasia

*Emergency Medicine Australasia* (2020) doi: 10.1111/1742-6723.13646

**ORIGINAL RESEARCH**

## Neurologic outcomes following the introduction of a policy for using soft cervical collars in suspected traumatic cervical spine injury: A retrospective chart review

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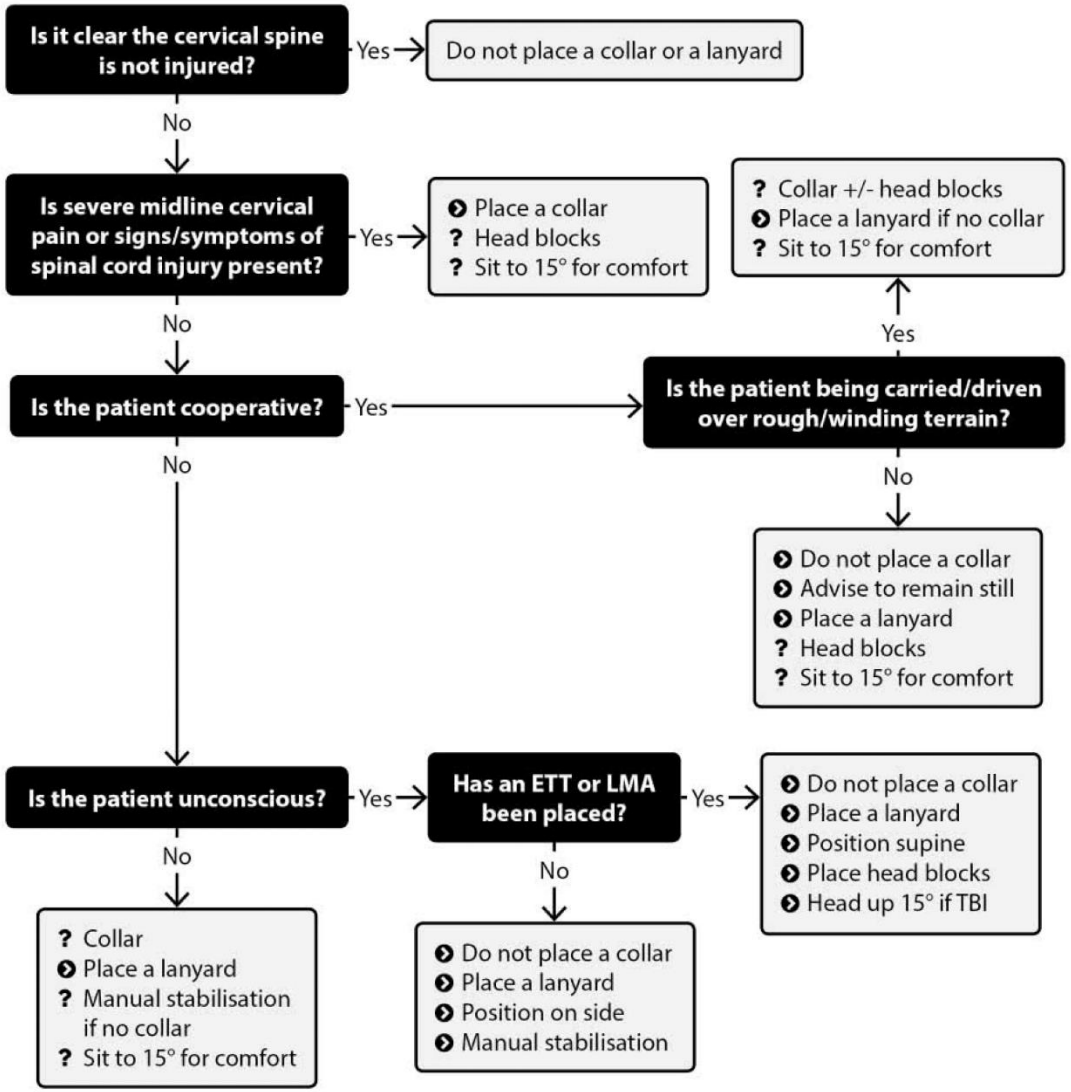
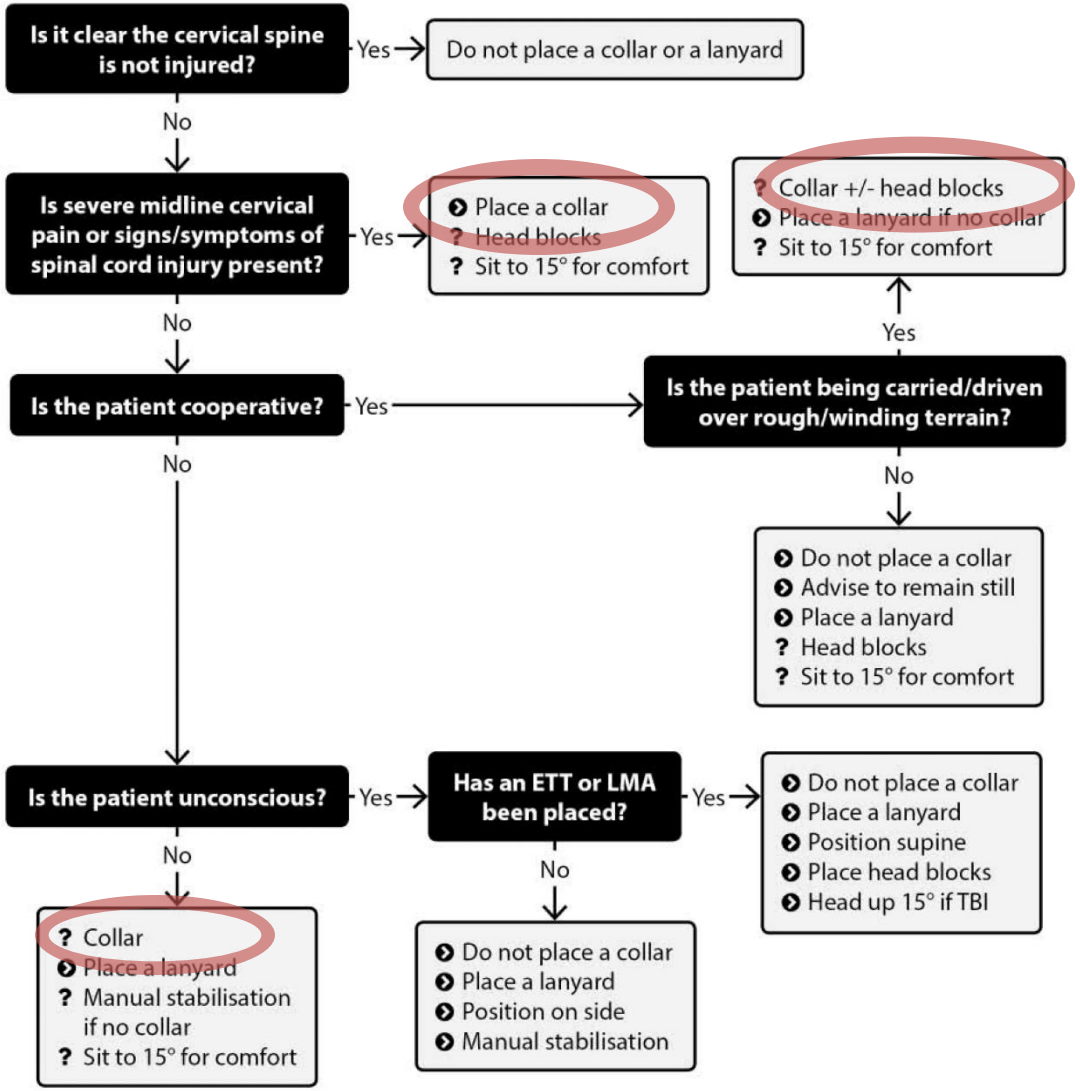
# Purpose

- 2017 St John Ambulance Service change of policy
  - Less frequent use of cervical spine collars
  - Instead uses lanyard as visual cue in some patients
- Assess for any change in outcomes with this new protocol

# St John Handbook Protocol



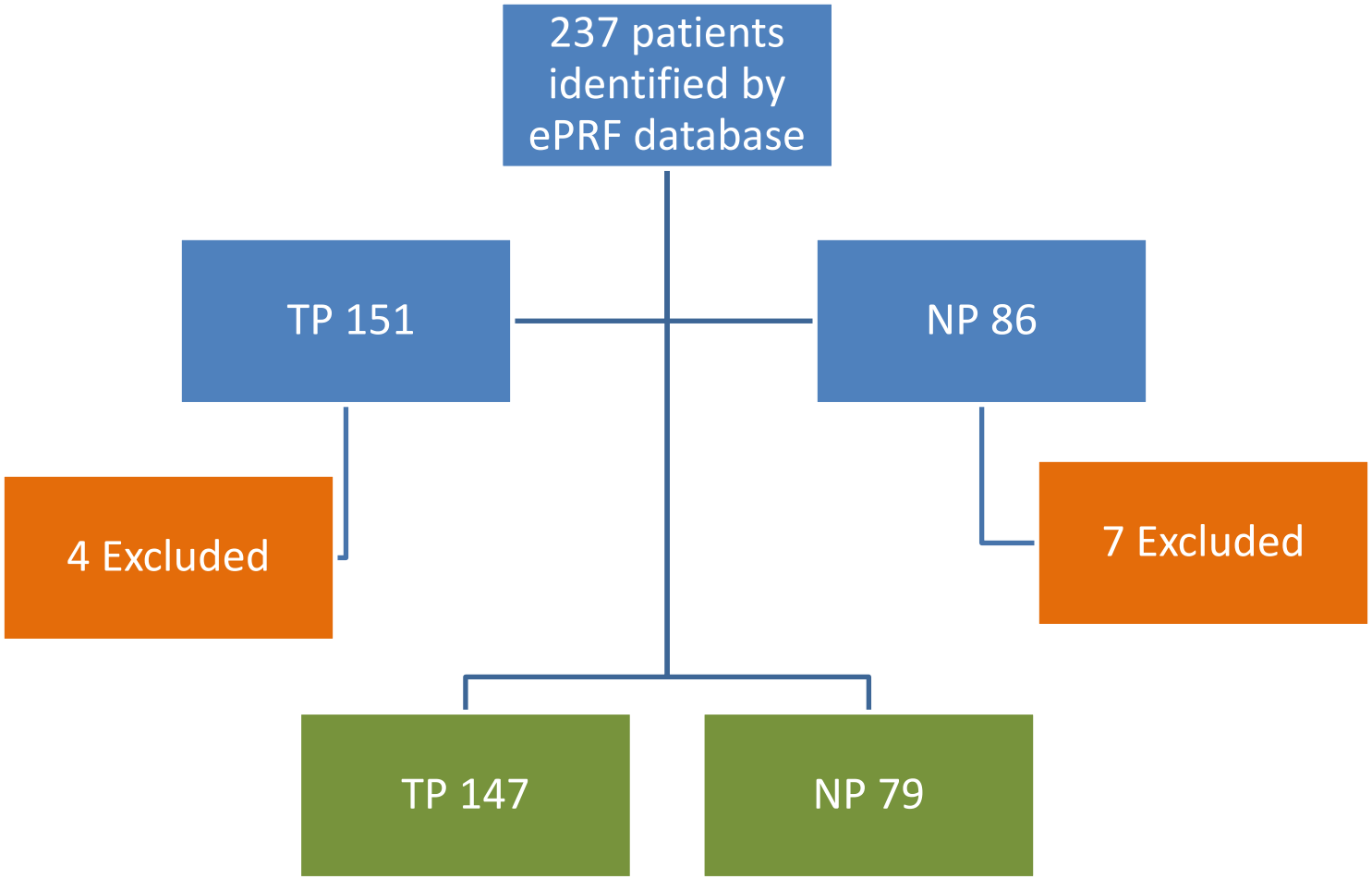
# St John Handbook Protocol



# Method

- Patients transported to Middlemore hospital with trauma and either lanyard or cervical spine collar from 6 months before the introduction (Traditional protocol (TP) group), and 6 months after the introduction of the new protocol (New Protocol (NP) group)were compared.
  - Patients were identified using the St John electronic patient reporting form (ePRF) database.
  - Hospital records including patient notes and radiology reports were then used to assess the presence and severity of cervical spine injury and neurological outcomes

# Inclusion and exclusion



| Variables | New Protocol (N=79) | Traditional Protocol (N=147) | Total | P-values |
|---|---|---|---|---|
| Age: Median (IQR) | 26 (18-51) | 26 (19-51) | 26 (19-51) | 0.892** |
| Gender | | | | |
| Female | 36 (45.6%) | 67 (45.6%) | 103 | >0.95* |
| Male | 43 (54.4%) | 79 (53.7%) | 122 | |
| Indeterminate | 0 (0%) | 1 (0.7%) | 1 | |
| Ethnicity | | | | |
| Asian | 9 (12.2%) | 24 (17.5%) | 33 | 0.451 |
| NZ Moari | 22 (29.7%) | 26 (19%) | 48 | |
| Pacific Island | 15 (20.3%) | 32 (23.4%) | 47 | |
| NZ European | 22 (29.7%) | 38 (27.7%) | 60 | |
| Other | 6 (8.1%) | 16 (11.7%) | 22 | |
| Not Other | 0 (0%) | 1 (0.7%) | 1 | |
| Mechanism | | | | |
| Assault | 2 (2.5%) | 10 (6.8%) | 12 | <0.0001* |
| Chemical poisoning | 0 (0%) | 1 (0.7%) | 1 | |
| Fall | 9 (11.4%) | 35 (23.8%) | 44 | |
| Hit by vehicle | 5 (6.3%) | 0 (0%) | 5 | |
| Machinery accidents | 0 (0%) | 1 (0.7%) | 1 | |
| None | 33 (41.8%) | 3 (2%) | 36 | |
| Other | 4 (5.1%) | 0 (0%) | 4 | |
| Other Fall from horse | 1 (1.3%) | 1 (0.7%) | 2 | |
| Other suicide | 1 (1.3%) | 0 (0%) | 1 | |
| RTA/RTC | 13 (16.5%) | 92 (62.6%) | 105 | |
| Suicide by hanging | 2 (2.5%) | 1 (0.7%) | 3 | |
| Tackled | 0 (0%) | 3 (2%) | 3 | |
| Vehicle accident | 9 (11.4%) | 0 (0%) | 9 | |
| Discharged destination | | | | |
| HDU | 0 (0%) | 1 (0.8%) | 1 | 0.303* |
| Home | 39 (57.4%) | 78 (58.7%) | 117 | |
| ICU | 3 (4.4%) | 4 (3%) | 7 | |
| Self-discharge | 0 (0%) | 1 (0.8%) | 1 | |
| Starship Hospital | 2 (2.9%) | 0 (0%) | 2 | |
| Transfer to starship | 1 (1.5%) | 0 (0%) | 1 | |
| Ward | 23 (33.8%) | 49 (36.8%) | 72 | |
| Alcohol | | | | |
| No | 59 (86.8%) | 115 (87.1%) | 174 | 0.94 |
| Yes | 9 (13.2%) | 17 (12.9%) | 26 | |
| Other Injuries | | | | |
| No | 21 (30.9%) | 58 (43.6%) | 79 | 0.081 |
| Yes | 47 (69.1%) | 75 (56.4%) | 122 | |

* Fisher exact test else Chi-square test used to test association ,** Kruskal-Wallis test used

# Presence of cervical spine injury by protocol

| Cervical Injury diagnosed | New Protocol (N=79) | Traditional Protocol (N=147) | Total | P-values |
|---|---|---|---|---|
| | | | | |
| None | 57 (83.8%) | 110 (82.7%) | 167 | 0.657 |
| Stable | 7 (10.3%) | 18 (13.5%) | 25 | |
| Unstable | 4 (5.9%) | 5 (3.8%) | 9 | |

# Neurological outcomes by protocol

| Neurological deficit | New Protocol (N=79) | Traditional Protocol (N=147) | Total | P-values |
|---|---|---|---|---|
| | | | | |
| None | 11 (100%) | 21 (91.3%) | 32 | 0.313 |
| Para/Tetra | 0 (0%) | 2 (8.7%) | 2 | |

# Length of stay by protocol

| Length of Stay | New Protocol (N=79) | Traditional Protocol (N=147) | Total | P-values |
|---|---|---|---|---|
| Days Median (IQR) | 0 (0-2) | 0 (0-3) | 0 (0-2) | 0.450** |
| ** Kruskal-Wallis test used | | | | |

# Discussion

- This is the first assessment of a protocol which utilises lanyards instead of collars in many patients.
- No significant increase in adverse neurological outcome is seen but neurological deficit, fortunately, remains a rare event.
- Larger studies are needed to assess this important change in prehospital cervical spine management

# References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