

Optimising Management Pathways for Open Fractures at a UK Regional Orthoplastic Centre

A Service Evaluation of Debridement, Fixation and Soft Tissue Coverage

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INTRODUCTION & AIM

Early debridement and definitive fixation with soft tissue coverage are modifiable risk factors for reducing fracture-related infection (FRI) and improving outcomes (Godina, 1986). National guidance recommends debridement within 12–24 hours, and definitive fixation with soft tissue coverage within 72 hours.

The North Yorkshire & Humberside Major Trauma Operational Delivery Network (NYHMTODN), established in April 2013, serves a population of 1.5–2 million. Through this 24-hour coordinated trauma network, long bone open fractures are flagged from the periphery and transferred from anywhere within the region for definitive management (Figure 1).

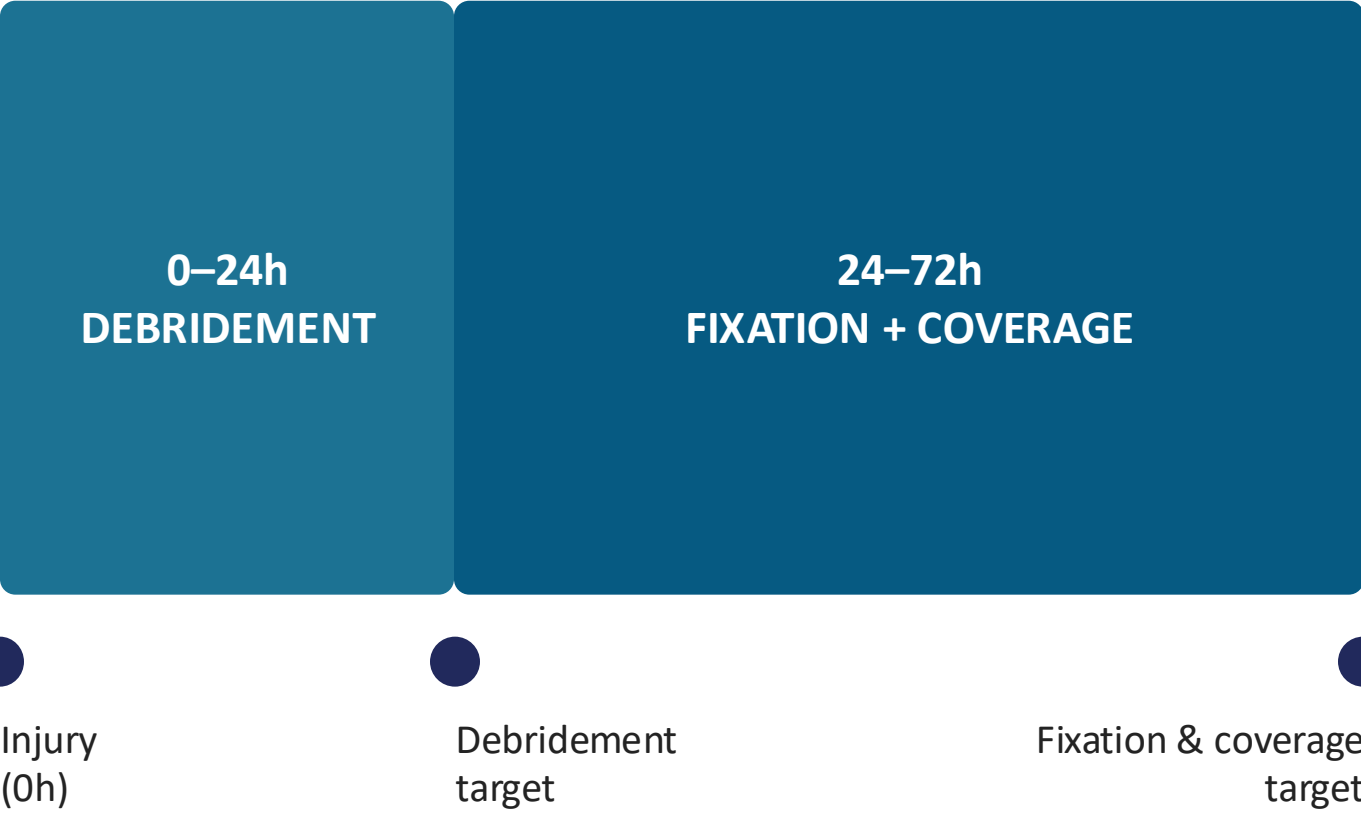
AIM To assess our unit’s compliance with national standards for debridement, fixation and soft tissue coverage as part of this regional trauma network.

METHODS

We performed a retrospective analysis of 107 consecutive patients with open long bone fractures referred to, or presenting at, our regional centre from within the NYHMTODN over a 12-month period (2024–2025).

Cases were identified from clinical coding data and stratified by demographics, anatomical pattern of injury, and Gustilo–Anderson classification.

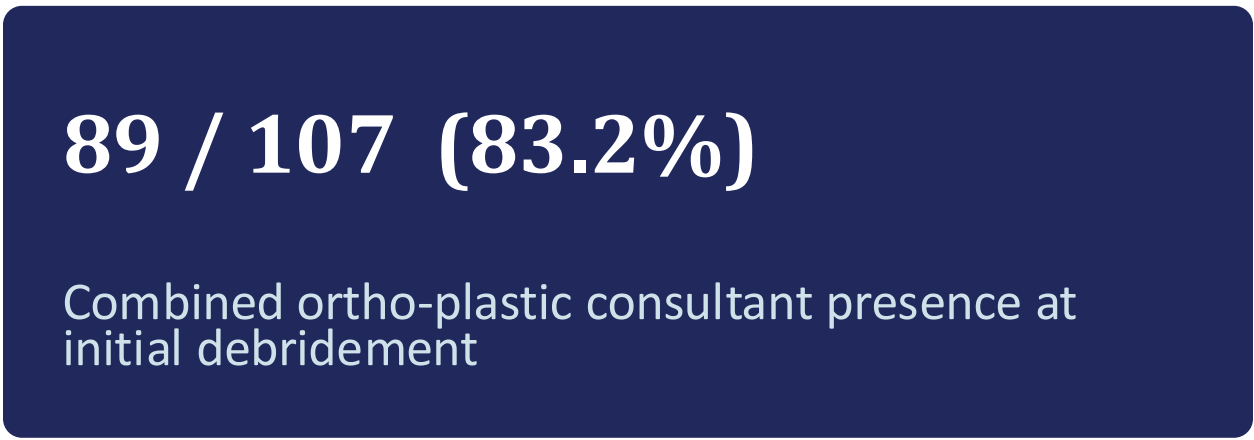
National Standards



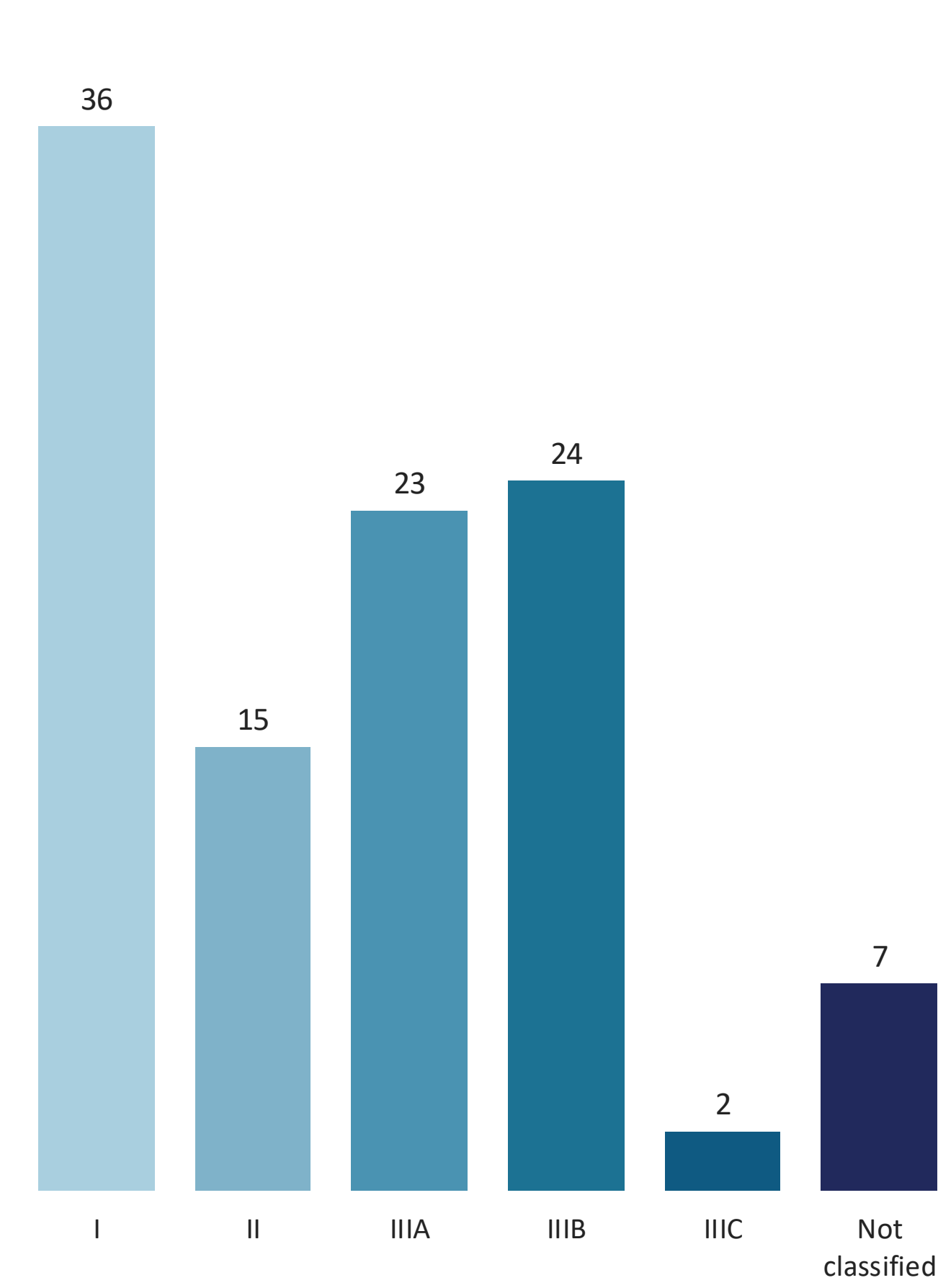
We assessed compliance with National Standards:

- Debridement within 24 hours
- Definitive bony fixation within 72 hours
- Soft tissue coverage within 72 hours

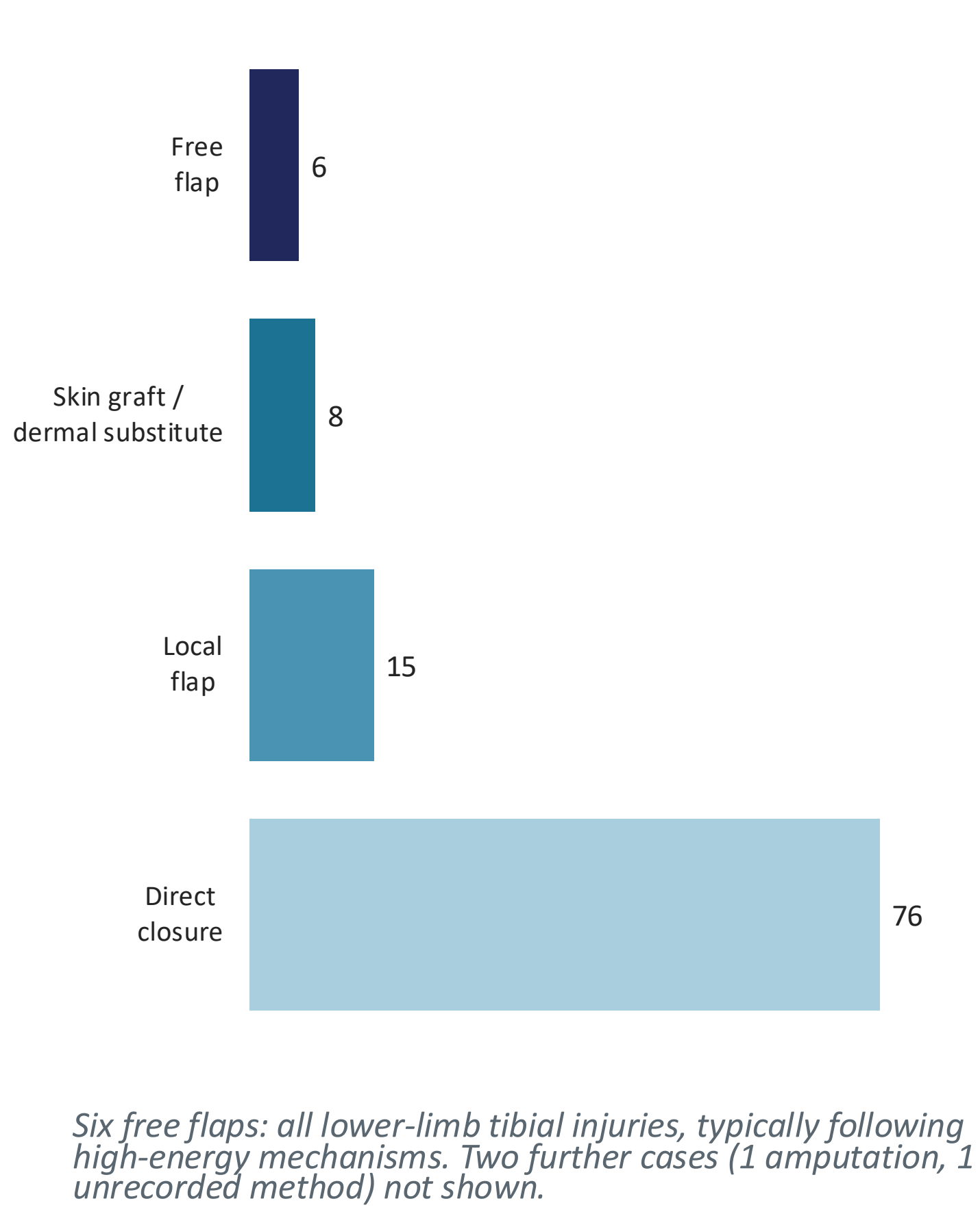
RESULTS CONT...



Gustilo–Anderson Grade (n = 107)



Method of Soft Tissue Reconstruction



Six free flaps: all lower-limb tibial injuries, typically following high-energy mechanisms. Two further cases (1 amputation, 1 unrecorded method) not shown.

Compliance with National Standards



Our patient sample had a mean age of 52 years (range 8–91) with 70 lower limb and 37 upper limb fractures.

Tibial injuries accounted for 61 of the lower limb injuries and radius/ulna injuries accounted for 28 of the upper limb injuries. 35 patients were excluded from final analysis due to insufficient information on injury time.

Open tibial injuries demonstrated a mean of 19.4 (range 4.1–51.1) hours to initial debridement, 54.1 (4.1–324.6) hours to definitive fixation, and 38.8 (4.1–143.8) hours to soft tissue coverage.

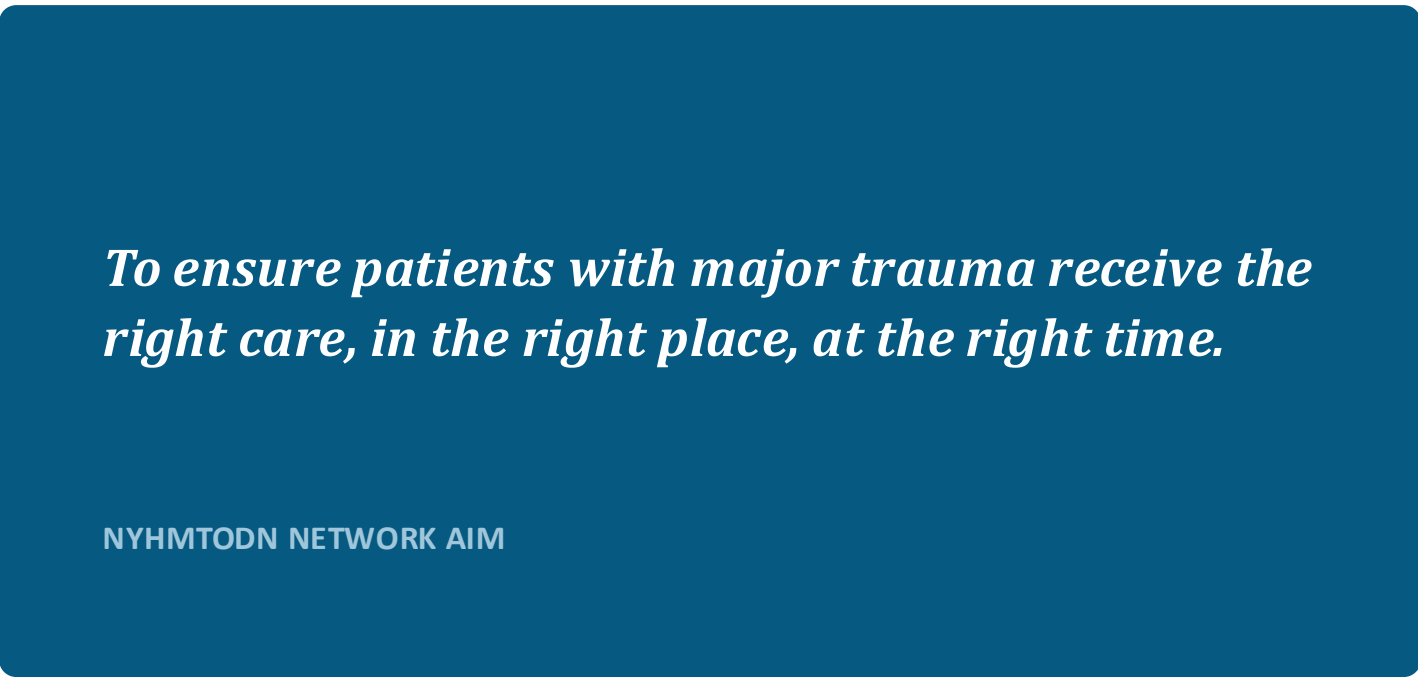
Compliance to national standards with debridement within 24 hours was 79.2% (57/72 patients). 90.2% (92/102) of cases achieved definitive soft tissue coverage within 72 hours and 87.3% (89/102), definitive bony fixation. Fixation and coverage were performed in a single operative episode in 93.1% (95/102) of cases.

CONCLUSION

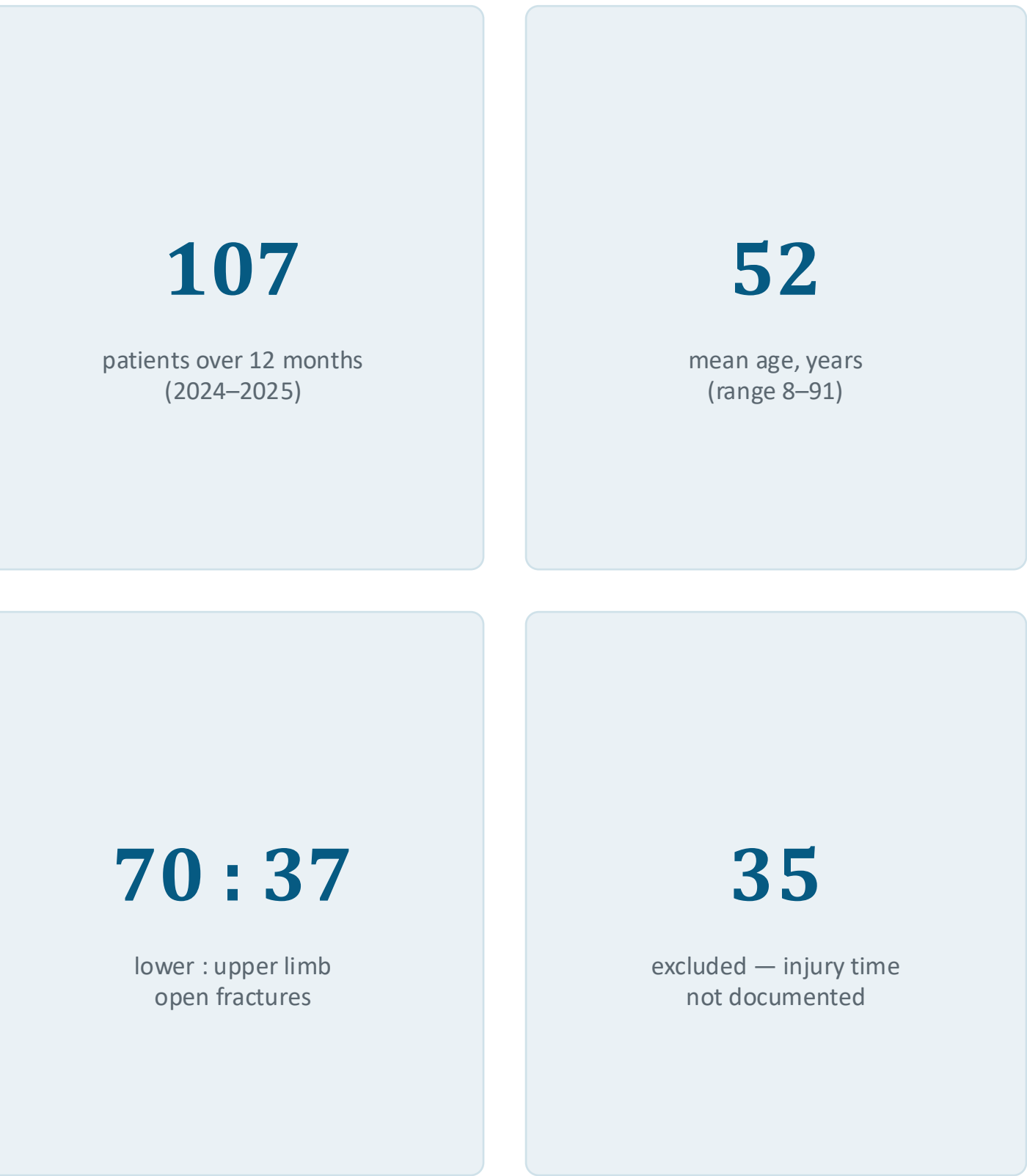
Recent national statistics report only 63% compliance with soft tissue coverage within 72 hours for open fractures.

Our unit, operating within a collaborative orthoplastic model as part of the NYHMTODN, delivers timely debridement and definitive reconstruction — demonstrating the value of a coordinated regional major trauma network in meeting national standards for open fracture care.

Network at a Glance



RESULTS



Time to Intervention

Region	n	Debridement	Fixation	Coverage
Tibial	61	19.4h (4.1–51.1)	54.1h (4.1–324.6)	38.8h (4.1–143.8)
Upper limb	37	≈ 21–24 hours across all stages		

Upper limb injuries reported as a combined range across debridement, fixation and coverage.

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