Predicting Allograft Requirement in the Management of Patients with Major Burn Injuries

Jessica Savage1, Hannah Hurst1, Alain Vandal2, Christin Coomarasamy2, Richard Wong She3
1. National Burn Centre, Middlemore Hospital, Counties Manukau District Health Board
2. Centre for Research, Knowledge & Information Management, Counties Manukau District Health Board

Introduction
• Early debridement and coverage of burn wounds saves lives.
• Allograft is the ‘gold-standard’ for temporary coverage of acute burns.

The benefits of allograft include:
• Physiological closure of the debrided burn wound.
• Avoidance of creating additional wounds in the unwell patient.
• Added certainty that the burn wound is adequately debrided before using valuable autograft.

In New Zealand our allograft is stored by the New Zealand Blood service:
• Approximately 50,000cm² are available immediately.
• If need exceeds 25,000cm² an overseas order is placed to the USA.
• Orders can take up to 5 days to arrive.

Predicting allograft requirement is challenging. The only published predictive model is based principally on the ‘sandwich grafting’ technique.

Aim
To produce a guide for the calculation of allograft ordering in acute burn care suitable for the model of care at the National Burn Centre

Method
• 5 year retrospective review (2006–2011).
• Included all adults admitted to the National Burn Centre of New Zealand with burns on whom allograft was used as a temporary wound coverage.
• Data sources included clinical records, electronic records, tissue bank records.

Demographics
• 46 patients… 14 (30%) female 32 (70%) male
• mean = 37 years… 16-76 years
• mean 44% TBSA… 0.5%-80% TBSA
• 15% mortality

Results
TBSA of allograft recipients compared to all patients admitted with burn injuries

Predicting Total Allograft requirement
(Probability that predicted order will be sufficiently large)

Average allograft used per patient per week by TBSA(%)

• 60% of all allograft used is used in the 1st week.
• Amount used decreases rapidly after this.

Predicting allograft requirement for the first week of care, by TBSA(%)

• Allograft is used in the care of the majority of patients with >30% TBSA burns.
• Variables in the amount of allograft needed include surgical technique and the rationale for allograft usage

Conclusions
• In our unit and with our practice we need (on average)
  • in the first week… 0.62cm² / cm² of burn
  or 1,111 x TBSA (%) if height & weight unknown
  • 0.9cm² / cm² of burn for the duration