

On the Horizon



Research Priorities in Burns for the Next Decade

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KEYWORDS

• Burn care • Scarring • Pain • Inflammation

KEY POINTS

- Massive inflammation is generally related to the most severe burns, which are treated in critical care units because of the risk of complications, including organ dysfunction and frank failure. Future research will be related to identification of differential early responses between those who recover without incident, and those who go on to organ failure and death with the caveats mentioned.
- Rehabilitation to facilitate return of function during and after burn wound healing is a central part of treatment, and persons dedicated to this problem comprise a large part of the burn treatment team.
- Those who sustain burns are more likely to have preexisting mental health issue. Further, the incidence of posttraumatic stress disorder is 10% to 30% in those treated for burns, regardless of severity, and is associated with the development of serious depression and other psychiatric disorders; this is a striking figure that is not well understood or appreciated.

INTRODUCTION

Burn care has significantly advanced in the past decades, commencing with the work of Gilles, Wallace, and McIndoe, who developed specific centers for burn care during World War II (Box 1, Figs. 1 and 2).¹ The response to key burn-related disasters in Boston, Massachusetts, and Texas City, Texas,² and the threat of nuclear war further drove the development of prominent burn centers dedicated to research and improving outcomes in severely burned patients. Advances in the 1950s, 1960s, and 1970s were rapid and wide ranging in response, most importantly the development of topical antimicrobials to decrease the threat of wound infection and

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Box 1**Research topics for the near future**

- Controlling inflammation and regulating hypermetabolism
 - Identification of differential early responses
 - Biomarkers
 - Information technology
 - Temporary organ replacement technologies
- Accelerating healing
 - Donor site healing
 - Cell-based therapies
 - Skin substitution
- Scar mitigation
 - Dermal equivalents
 - Scar treatments
 - Topical
 - Injection
 - Laser
 - Systemic anti-inflammation
- Eliminating pain
 - Characterization
 - Neuropathic pain
 - Itch
- Rehabilitation implications
 - Demonstrate benefit
 - Identify effective treatments
 - Differentiate treatments
- Psychological recovery
 - Screening
 - Pharmacotherapy
 - Alternative treatments

resuscitation protocols to significantly decrease the incidence and ramifications of burn shock.³

In the late 1970s through the 1990s, advances in operative care took the forefront with the growing acceptance of early excision and grafting of burn wounds, ushering in another era of burn care and greatly diminishing wound care complications.^{4,5} Further, enhanced attention to the effects of nutrition and control of the hypermetabolic response decreased not only effects on mortality, but improvements in quality of life; thus, morbidity also became more of a focus. All of this took place during codification of multidisciplinary burn teams to enhance outcomes and recovery.⁶ The teams included not only surgeons and nurses with specialty in wound care,

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