



Traitement des brûlés pédiatriques à l'intérieur d'un programme accrédité

Isabelle Perreault, FRCSC, chirurgienne plasticienne

Réunion académique de traumatologie

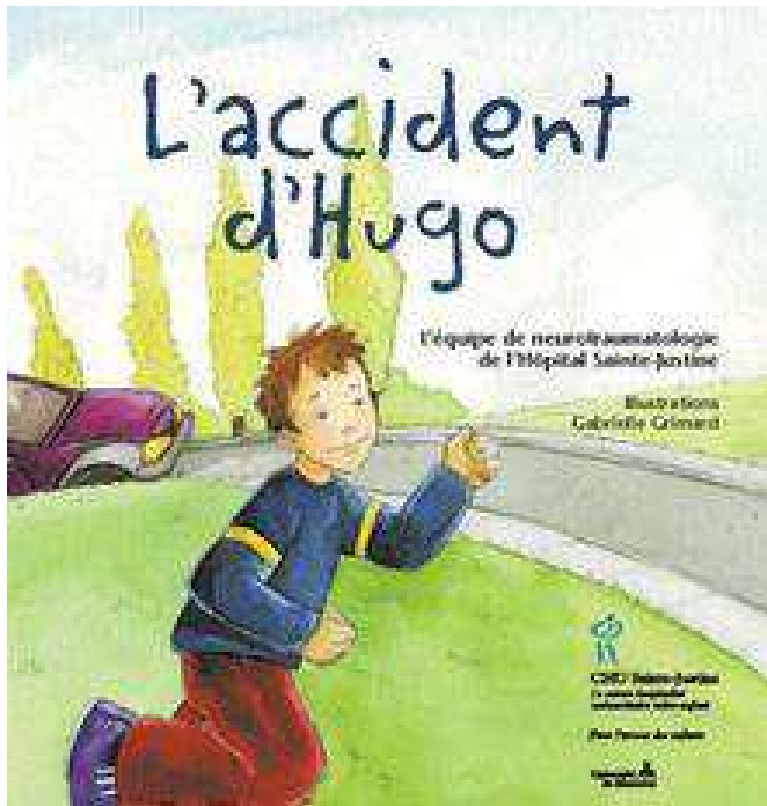
CHU Sainte-Justine

7 novembre 2016





CHU Sainte-Justine – Centre de trauma



CHU Sainte-Justine – Centre de trauma



CHU Sainte-Justine et traitement des brûlés en 2016

- Grand virage vers...
 - Traitement **ambulatoire** des brûlures petite superficie;
 - Collaboration étroite avec équipe de la **douleur**;
 - Approche systématique, protocolisée, « **evidence-based** »
 - FOPR



CHU Sainte-Justine et traitement des brûlés en 2016

- Traitement de brûlures massives avec succès





DISCLAIMER



DISCLAIMER

- The opinions expressed in this presentation are those of the author alone
- Views expressed in the conclusions are Dr. Prreault's alone.

Objectifs présentation

- **Nouveaux enjeux et points d'intérêt** dans le traitement des brûlés;
- Composantes des **programmes accrédités** – « Verified Burn Centers »;
- **Objectifs à atteindre** en vue d'une accréditation

Centres d'expertise au Québec - Brûlures

- Adulte → 2 centres d'expertise désignés

- Québec:



- Montréal:



Centres d'expertise au Québec - Brûlures

- Enfants → Aucun...



CHU Sainte-Justine



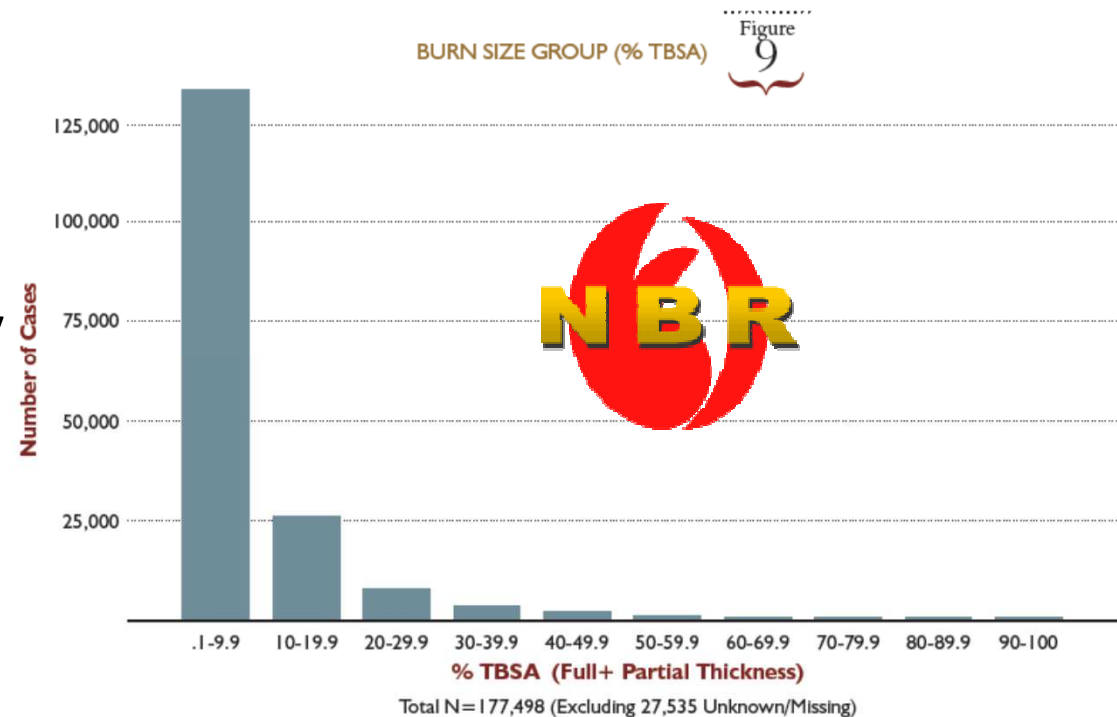
Objectifs présentation

- Nouveaux enjeux et points d'intérêt dans le traitement des brûlés;
- Composantes des programmes accrédités – « Verified Burn Centers »;
- Objectifs à atteindre en vue d'une accréditation

Le portrait des brûlés en 2016



- **Prévention** a eu un impact majeur sur la ↓ **incidence des brûlures majeures**
- NBR Report 2016:
 - Burns that have a > **50%** total body surface area make up **only 2% of cases** with a recorded burn injury
 - The burn size associated with a 50% case fatality (LD-50) occurs once burns are greater than 65 - 70% TBSA.



2016

NATIONAL BURN REPOSITORY

REPORT OF DATA FROM 2006-2015



Table
25

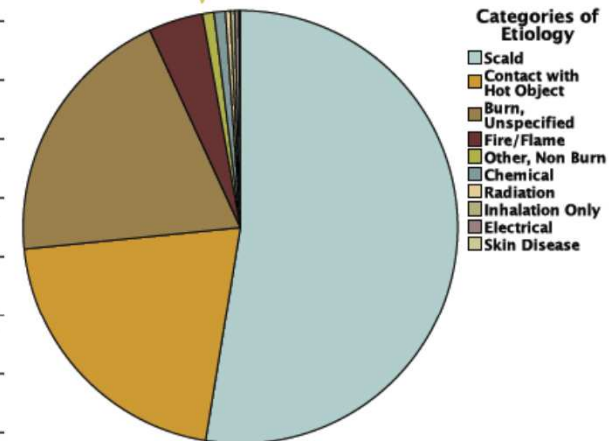
LIVED/DIED BY BURN GROUP SIZE
(% TBSA)

	Lived	Died	
%TBSA	Cases	Cases	Mortality
0.1 - 9.9	3,400	0	0.0
10 - 19.9	474	1	0.2
20 - 29.9	113	3	2.6
30 - 39.9	39	5	11.4
40 - 49.9	20	4	16.7
50 - 59.9	12	1	7.7
60 - 69.9	1	6	85.7
70 - 79.9	3	0	0.0
80 - 89.9	1	0	0.0
> 90	0	0	
Subtotal	4,063	20	0.5
Missing or 0%	1,205	38	3.1
TOTAL	5,268	58	1.1

Total N=5,326

Figure
24

ETIOLOGY

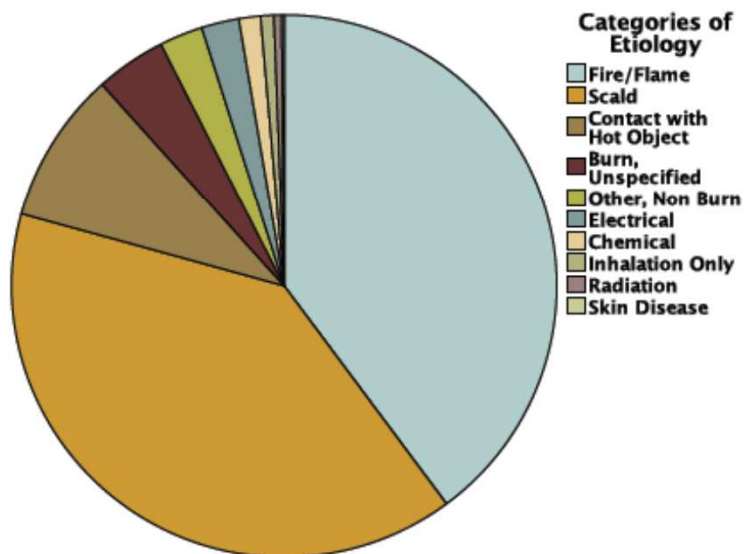


Total N=5,184 (Excluding 142 Unknown/Missing)



Le portrait des brûlés en 2016 enfants 5-15 ans

Figure
36
ETIOLOGY



Total N=17,709 (Excluding 801 Unknown/Missing)

ETIOLOGY
Table
45

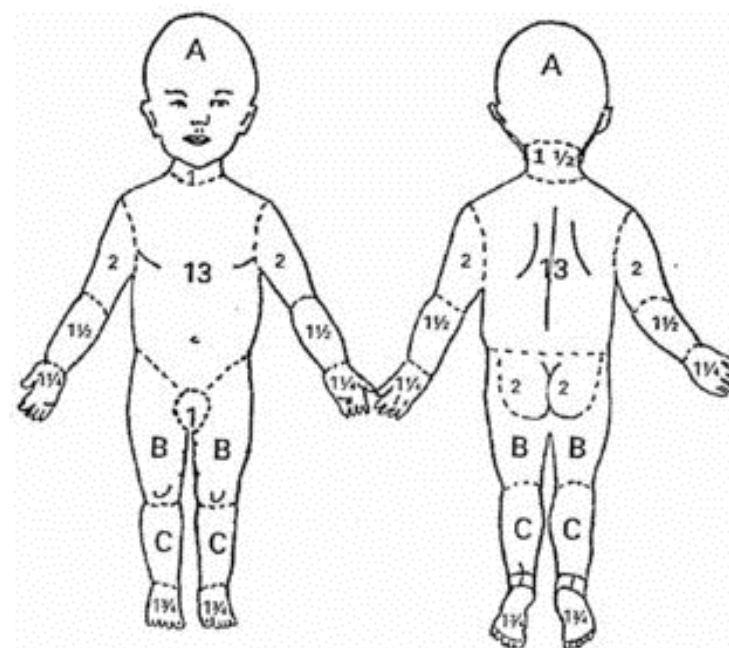
Etiology	Cases	% Valid
Fire/Flame	7,056	39.8%
Scald	6,986	39.4%
Contact with Hot Object	1,606	9.1%
Burn, Unspecified	739	4.2%
Electrical	393	2.2%
Chemical	227	1.3%
Inhalation Only	139	0.8%
Radiation	79	0.4%
Burn Subtotal	17,225	97.3%
Other, Non Burn	457	2.6%
Skin Disease	27	0.2%
Non-Burn Subtotal	484	2.7%
Unknown	801	
TOTAL	18,510	

Le portrait des brûlés en 2016 enfants 5-15 ans

Table
49 LIVED/DIED BY BURN GROUP SIZE
(% TBSA)

	Lived	Died	
%TBSA	Cases	Cases	Mortality Rate
0.1 - 9.9	12,985	11	0.1
10 - 19.9	2,073	7	0.3
20 - 29.9	590	6	1.0
30 - 39.9	294	3	1.0
40 - 49.9	166	10	5.7
50 - 59.9	88	6	6.4
60 - 69.9	69	8	10.4
70 - 79.9	51	8	13.6
80 - 89.9	23	21	47.7
> 90	7	15	68.2
Subtotal	16,346	95	0.6
Missing or 0%	2,031	38	1.8
TOTAL	18377.0	133.0	0.7

Total N=18,510



Area	Age 0	Age 1	Age 5	Age 10	Age 15
A = 1/2 of Head	9 1/2	8 1/2	6 1/2	5 1/2	4 1/2
B = 1/2 of Thigh	2 1/4	3 1/4	4 1/4	4 1/4	4 1/2
C = 1/2 of Leg	2 1/2	2 1/2	3	3	3 1/4

Virage ambulatoire du traitement des brûlures

- **Épidémiologie changeante** sur les caractéristiques des brûlures
 - Incidence globale des brûlures ↓
 - Incidence ↑ des brûlures de petites surfaces
 - Ped ≥80-85% avec brûlures <10% TBSA
- **Centralisation** des soins vers des Centres d'expertise
- **Émergence d'intérêt scientifique** et de **pansements nouvelle génération**
- Études de **coût-efficacité**



La Flamazine... peut-être pas la panacée...

Effect of Topically Applied Silver Sulfadiazine on Fibroblast Cell Proliferation and Biomechanical Properties of the Wound

Ae-Ri Cho Lee and Hee Kyung Moon

College of Pharmacy, Duksung Womens University, Ssangmun-dong, Dobong-ku, Seoul 132-714, Korea

The effect of silver sulfadiazine (SSD) on the proliferation of human dermal fibroblast (HDF) was studied to determine the impact of the drug on the wound healing process and dermal mechanical strength. Human dermal fibroblasts were cultured to 80% confluency using DMEM with 10% FBS and viability of the cell was estimated using neutral red assay. In addition, the 2nd degree burn wound was prepared on the anterior part of rabbit ear skin and dressings containing SSD were applied for 96 h. Presence of inflammatory cells and degree of re-epithelialization were investigated in the wound. After 15 day of the induction of burn wounds, the treated area was excised and dermal mechanical strength was quantitatively measured with a constant speed tensiometer. SSD was found to be highly cyto-toxic in cultured HDF cells. The topical application of SSD (2%) could control the infection as evidenced by the lack of accumulation of inflammatory cells in histological evaluation. Therefore, these observations suggested that the impairment of dermal regeneration and decreased mechanical strength of dermal tissue was resulted from the cyto-toxic effect of SSD on dermal cells. Since the decreased mechanical strength may lead to reduction in resilience, toughness and maximum extension of the tissue, the identification of optimum dose for SSD that limits infection while minimizes the cyto-toxic effect may be clinically relevant.

A Randomized Controlled Study of Silver-Based Burns Dressing in a Pediatric Emergency Department

Matthew Brown, MBChB,* Stuart R. Dalziel, FRACP, PhD,*
Eleanor Herd, RGON, BA, MN (Child and Family),† Kathryn Johnson, BSc, MN, NP,*
Richard Wong She, MHB (Hons), MBChB, FRACS (Plastic),‡ and
Michael Shenherd, FRACP, MPH*

BURNS 33 (2007) 701–707



available at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/burns



A retrospective cohort study of Acticoat™ versus Silvazine™ in a paediatric population

Leila Cuttle, Sanjeev Naidu, Julie Mill, Wendy Hoskins, Karina Das, Roy M. Kimble*

Royal Children's Hospital Burns Research Group, University of Queensland, Department of Paediatrics and Child Health,
Royal Children's Hospital, Herston, Queensland 4029, Australia

Healing of burn wounds by topical treatment: A randomized controlled comparison between silver sulfadiazine and nano-crystalline silver

Randomized Clinical Study of Hydrofiber Dressing With Silver or Silver Sulfadiazine in the Management of Partial-Thickness Burns

Daniel M. Caruso, MD,* Kevin N. Foster, MD,* Sigri A. Blome-Eberwein, MD,†
John A. Twomey, MD,‡ David N. Herndon, MD,§ Arnold Luterman, MD,¶

BURNS 40 (2014) 1267–1273



Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/burns



Topical petrolatum gel alone versus topical silver sulfadiazine with standard gauze dressings for the treatment of superficial partial thickness burns in adults: A randomized controlled trial[☆]

Biobrane versus 1% Silver Sulfadiazine in Second-Degree Pediatric Burns

Juan P. Barret, M.D., Peter Dziewulski, F.R.C.S., F.R.C.S.(Plast.), Peter I. Ramzy, M.D.,
Steven E. Wolf, M.D., Manubhai H. Desai, M.D., and David N. Herndon, M.D.

Galveston, Texas

Cost-Effectiveness Comparison Between Topical Silver Sulfadiazine and Enclosed Silver Dressing for Partial-Thickness Burn Treatment

Clifford C. Sheckter, MD,* Michael M. Van Vliet, MD,* Naveen M. Krishnan, BS, MPhil,†
William J. Gerner, MD*

A Prospective, Randomized Trial of Acticoat Versus Silver Sulfadiazine in the Treatment of Partial-Thickness Burns: Which Method Is Less Painful?

Qu'est-ce que ces études ont en commun?

Type d'études et types de lésions:

- Brûlures petites dimensions/ Deuxième degré superficiel/ Non compliquées
- Plusieurs articles en milieu pédiatrique
- Petites études prospectives et rétrospectives
- Risque de biais* pour les analyses comparatives

Conclusions similaires...

1. ↓ fréquence des changements de pansements → ↓ **Douleur**, ↓ **Anxiété**, ↓ Prestation des services infirmiers, ↓ **Coûts globaux**
2. ↑ **Coût-efficacité** pour les nouvelles alternatives
3. ↑ **Réépithélialisation** avec les nouveaux pansements sans ↑ incidence de complications

My own critical appraisal

Journal of Burn Care & Research
May/June 2006

Randomized Clinical Study of Hydrofiber Dressing With Silver or Silver Sulfadiazine in the Management of Partial-Thickness Burns

Daniel M. Caruso, MD,* Kevin N. Foster, MD,* Sigri A. Blome-Eberwein, MD,†
John A. Twomey, MD,‡ David N. Herndon, MD,§ Arnold Luterman, MD,¶
Paul Silverstein, MD,|| Jeffrey R. Antimarino, MD,** Gregory J. Bauer, MD††

This prospective, randomized study compared protocols of care using either AQUACEL® Ag Hydrofiber® (ConvaTec, a Bristol-Myers Squibb company, Skillman, NJ) dressing with silver (n = 42) or silver sulfadiazine (n = 42) for up to 21 days in the management of partial-thickness burns covering 5% to 40% body surface area (BSA). AQUACEL® Ag dressing was associated with less pain and anxiety during dressing changes, less burning and stinging during wear, fewer dressing changes, less nursing time, and fewer procedural medications. Silver sulfadiazine was associated with greater flexibility and ease of movement. Adverse events, including infection, were comparable between treatment groups. The AQUACEL® Ag dressing protocol tended to have lower total treatment costs (\$1040 vs. \$1180) and a greater rate of re-epithelialization (73.8% vs 60.0%), resulting in cost-effectiveness per burn healed of \$1,409.06 for AQUACEL® Ag dressing and \$1,967.95 for silver sulfadiazine. **A protocol of care with AQUACEL® Ag provided clinical and economic benefits compared with silver sulfadiazine in patients with partial-thickness burns.** (J Burn Care Res 2006;27: 298-309)

ACKNOWLEDGMENTS

Study centers were compensated for performing the study, and ConvaTec provided AQUACEL[®] Ag dressing and silver sulfadiazine. Patients were not compensated for their participation. ConvaTec supervised the design of the study, the data analyses, and the development of the manuscript.



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ScienceDirect

journal homepage: www.elsevier.com/locate/burns

Review

A systematic review of silver-containing dressings and topical silver agents (used with dressings) for burn wounds

Z. Aziz*, S.F. Abu, N.J. Chong

Department of Pharmacy, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia

REVIEW

Inpatient silver sulphadiazine versus outpatient nanocrystalline silver models of care for pediatric scald burns: A value analysis

Claudia Malic MD MRCS FRCS, Cynthia Verchere MD FRCSC, Jugal S Arneja MD MBA FRCSC

Wound Repair and Regeneration



Nonsilver treatment vs. silver sulfadiazine in treatment of partial-thickness burn wounds in children: A systematic review and meta-analysis

Zjir M. Rashaan, MD^{1,2}; Pieta Krijnen, PhD¹; Rachel R. M. Klammer, MD¹; Inger B. Schipper, MD, PhD¹; Olaf M. Dekkers, MD, PhD^{3,4}; Roelf S. Breederveld, MD, PhD^{1,2,5}

1. Department of Surgery,
2. Burn Center, Red Cross Hospital Beverwijk, and
3. Department of Clinical Epidemiology,
4. Department of Endocrinology, Leiden University Medical Center, Leiden,
5. Association of Dutch Burn Centers, Beverwijk, The Netherlands

Review

Optimal treatment of partial thickness burns in children: A systematic review

A.F.P.M. Vloemans^{a,*}, M.H.E. Hermans^b, M.B.A. van der Wal^{a,c,d}, J. Liebrechts^a, E. Middelkoop^{a,c,d}^a Burn Centre, Red Cross Hospital, Beverwijk, The Netherlands^b Hermans Consulting, Inc., Newtown, PA, USA^c Association of Dutch Burn Centres, Beverwijk, The Netherlands^d Department of Plastic, Reconstructive and Hand Surgery, MOVE Research Institute, VU University Medical Centre, Amsterdam, The Netherlandsavailable at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/burns

Review

Use of ActicoatTM dressings in burns: What is the evidence?

Roba Khundkar^{a,*}, Claudia Malic^b, Tim Burge^b^a Department of Plastic and Reconstructive Surgery, John Radcliffe Hospital, Headington, Oxford, OX3 9DU, UK^b Department of Plastic & Reconstructive Surgery, Frenchay Hospital, Frenchay Park Road, Bristol, BS16 1LE, UK

Revue systématique et Méta analyses

- Basées sur les études disponibles:
 - Petites brûlures superficielles (TBSA)
 - Non compliquées

- Conclusions communes:

-Importance d'études haute qualité PRCT pour atteindre un haut niveau d'évidence



Dressings for superficial and partial thickness burns (Review)

Wasiak J, Cleland H, Campbell F, Spinks A



Antibiotic prophylaxis for preventing burn wound infection (Review)

Barajas-Nava LA, López-Alcalde J, Roqué i Figuls M, Solà I, Bonfill Cosp X

Importance de la collaboration avec la clinique douleur

- Approche collaborative et protocolisée
- Sédation/Analgésie PO
- Soulagement du prurit multimodal
- Psychiatre
- Recherche sur thérapie adjuvante
 - Réalité Virtuelle
 - Enfants très jeunes
 - Distraction spécifiques niveau développement
 - Distraction avec les clowns



Les grands brûlés pédiatriques

BURN SIZE AND SURVIVAL PROBABILITY IN PEDIATRIC PATIENTS IN MODERN BURN CARE

Robert Kraft, MD^{1,2}, David N Herndon, MD^{1,2}, Ahmed M Al-Mousawi, MD^{1,2}, Felicia N Williams, MD¹, Celeste C Finnerty, PhD¹, and Marc G Jeschke, MD, PhD^{1,2,3}

¹Shriners Hospitals for Children, Galveston, Texas

²Department of Surgery, University Texas Medical Branch, Galveston, Texas

³Ross Tilley Burn Centre Sunnybrook Health Sciences Centre and Division of Plastic Surgery, University of Toronto, Toronto, ON, Canada

Lancet. 2012 March 17; 379(9820): 1013–1021. doi:10.1016/S0140-6736(11)61345-7.

Morbidity and Survival Probability in Burn Patients in Modern Burn Care*

Marc G. Jeschke, MD, PhD¹; Ruxandra Pinto, PhD^{2,3}; Robert Kraft, MD^{4,5}; Avery B. Nathens, MD, PhD¹; Celeste C. Finnerty, PhD^{4,5,6}; Richard L. Gamelli, MD⁷; Nicole S. Gibran, MD⁸; Matthew B. Klein, MD⁸; Brett D. Arnoldo, MD⁹; Ronald G. Tompkins, MD¹⁰; David N. Herndon, MD^{4,5}; the Inflammation and the Host Response to Injury Collaborative Research Program

Crit Care Med 2015; 43:808–815

Interpretation—We established that in a modern pediatric burn care setting, a burn size of approximately 60% TBSA represents a crucial threshold for post-burn morbidity and mortality. Based on these findings, we recommend that pediatric burn patients over 60% TBSA burn should be immediately transferred to a specialized burn center. Furthermore, at the burn center patients should be treated with increased vigilance and enhanced therapies recognizing the increased risk for poor outcome associated with this burn size.

Table 49 LIVED/DIED BY BURN GROUP SIZE (% TBSA)

	Lived	Died	
%TBSA	Cases	Cases	Mortality Rate
0.1 - 9.9	12,985	11	0.1
10 - 19.9	2,073	7	0.3
20 - 29.9	590	6	1.0
30 - 39.9	294	3	1.0
40 - 49.9	166	10	5.7
50 - 59.9	88	6	6.4
60 - 69.9	69	8	10.4
70 - 79.9	51	8	13.6
80 - 89.9	23	21	47.7
> 90	7	15	68.2
Subtotal	16,346	95	0.6
Missing or 0%	2,031	38	1.8
TOTAL	18377.0	133.0	0.7

HOSPITAL DAYS BY BURN GROUP SIZE (% TBSA) Table 50

%TBSA	Cases	Mean +/- SEM
0.1 - 9.9	12,996	3.8+/-0.0
10 - 19.9	2,080	11.1+/-0.2
20 - 29.9	596	23.1+/-0.7
30 - 39.9	297	37.6+/-1.5
40 - 49.9	176	42.8+/-2.0
50 - 59.9	94	55.2+/-4.5
60 - 69.9	77	67.9+/-5.3
70 - 79.9	59	60.6+/-6.6
80 - 89.9	44	60.0+/-9.6
> 90	22	29.1+/-13.9
Subtotal	16,441	7.4+/-0.1
Missing or 0%	2,069	4.6+/-0.2
TOTAL	18,510	7.1+/-0.1

Conclusions: In the modern burn care setting, adults with over 40% total body surface area burned and children with over 60% total body surface area burned are at high risk for morbidity and mortality, even in highly specialized centers. (*Crit Care Med* 2015; 43:808–815)



Défis associés à la brûlure massive

- En plus d'une prise en charge complexe SIP

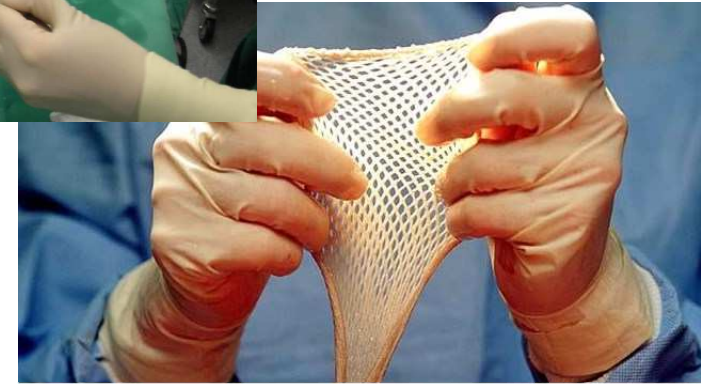
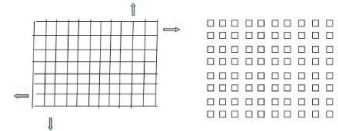
- Couverture larges surfaces de brûlures
PROBLÉMATIQUE

- Peu de sites donneurs disponibles
- Caractérisé par problèmes de guérison
 - Sites donneurs – multiples prélèvements
 - Sites de brûlures profondes



Le Défi de la brûlure massive

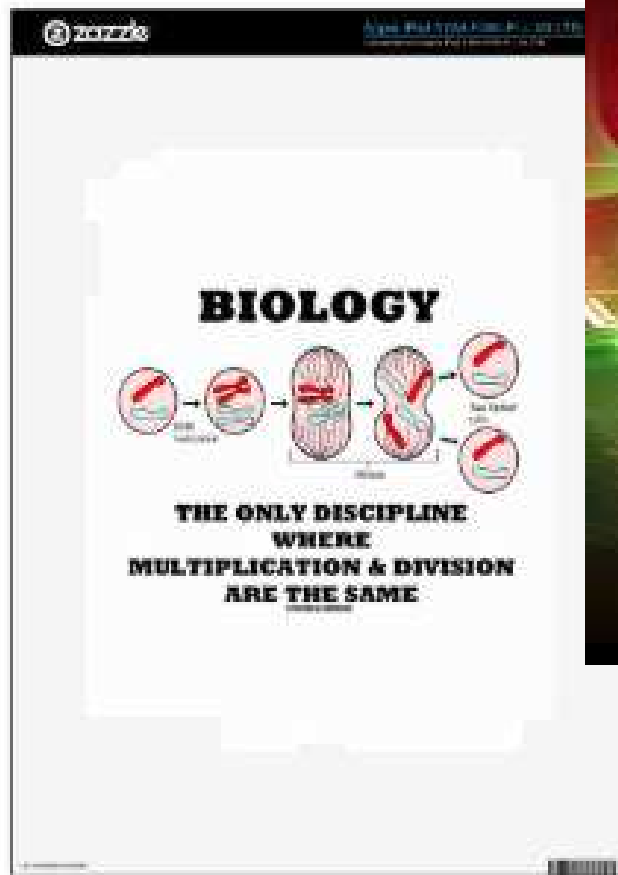
- Solutions **classiques**...
et **nouvelles**...
- **Expansion** de la peau saine disponible
 - Meek technique of grafting
 - Meshed Grafts
- **Creation** de « nouvelle peau »
 - Engineered Skin Substitutes -**ESS**
 - Autologous Substitutes



Modified Meek Micrografting Technique for Wound Coverage in Extensive Burn Injuries

Abelardo Medina, MD, PhD, FACS,*† Timothy Riegel, MD, FRCSC,‡
Deborah Nystad, RN,‡ Edward E. Tredget, MD, MSc, FRCSC*†‡

EES

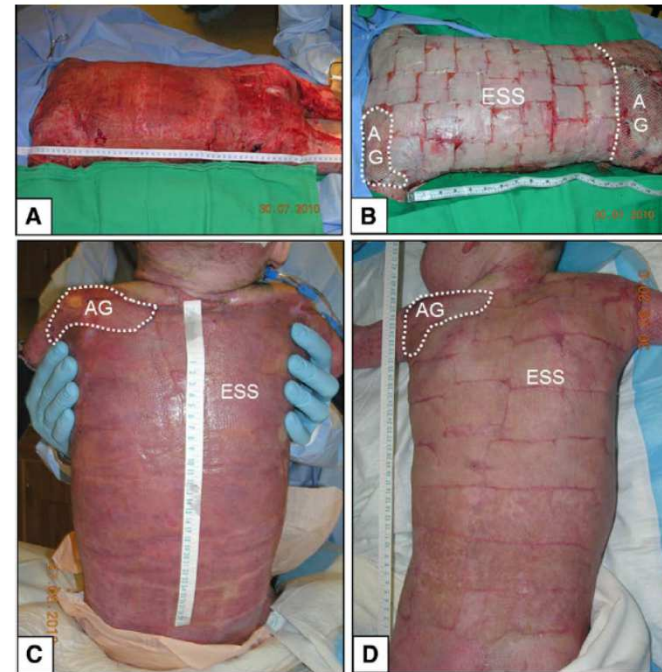


Randomized, Paired-Site Comparison of Autologous Engineered Skin Substitutes and Split-Thickness Skin Graft for Closure of Extensive, Full-Thickness Burns

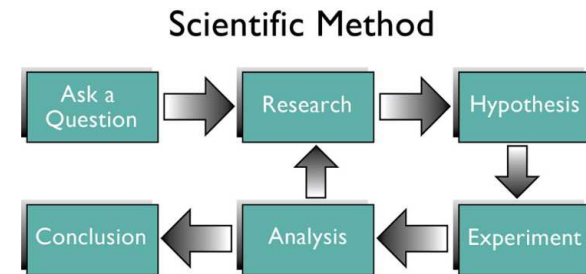
Steven T. Boyce, PhD,*† Peggy S. Simpson, RN, MSN,†‡ Mary T. Rieman, RN,†
Petra M. Warner, MD,*† Kevin P. Yakuboff, MD,*†‡ J. Kevin Bailey, MD,*†§
Judith K. Nelson, RN,† Laura A. Fowler, RN,† Richard J. Kagan, MD*†

J Burn Care Res 2016

- 16 patients brûlés pédiatriques
- TBSA $\geq$ 50% brûlure chirurgicale
- Comparaison pairée par site AG vs ESS
 - ↓ **Mortalité** ajustée âge/TBSA (6,25% vs 30,3%)
 - Couverture autologue réussie avec
 - ↓ Besoin de SD et ↓ morbidité



Les substituts cutanés bilamellaires



**I have not failed.
I've just found
10,000 ways
that won't work.**

-Thomas A. Edison



EmilysQuotes.Com

ESS



- Province of Quebec:



- Substituts cutanés depuis 2005
- Laboratoire Organogénèse Expérimentale, Université Laval



LOEX ESS - SASS



BSS CARACTERISTIQUES

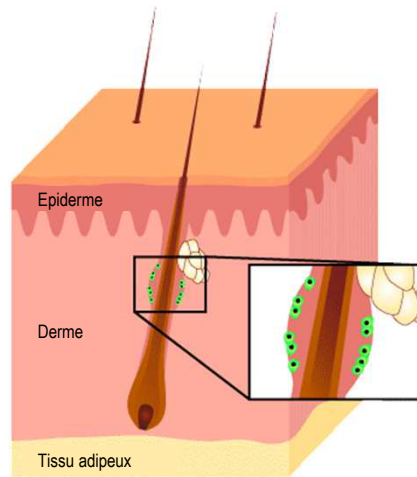
- **100% autologous**
- Self-assembled bilayered skin substitute (**SASS**)... **Auto-assemblage**
- Structure et fonction très similaires à peau native
- Utilisé comme greffe autologue permanente dans les brûlures massives menaçant survie

INDICATIONS

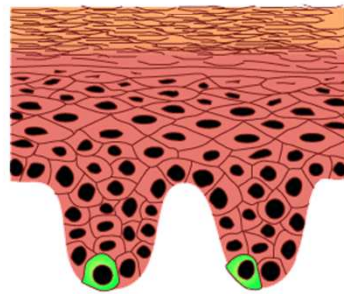
- Brûlures massives
- $\geq 60\%$ TBSA brûlure chirurgicale
 - Délai SASS 8 semaines



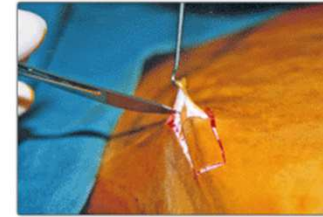
Hairy skin



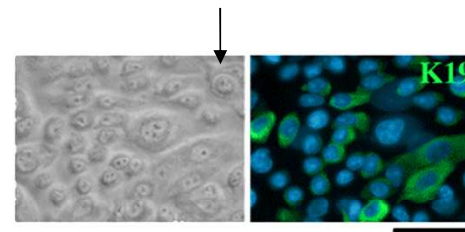
Glabrous hairless skin



 = Cells expressing K19 marker



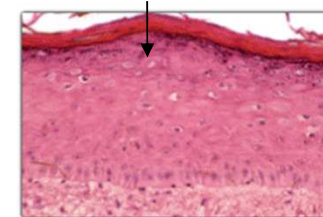
Skin biopsy



Culture containing Epidermal Stem Cells



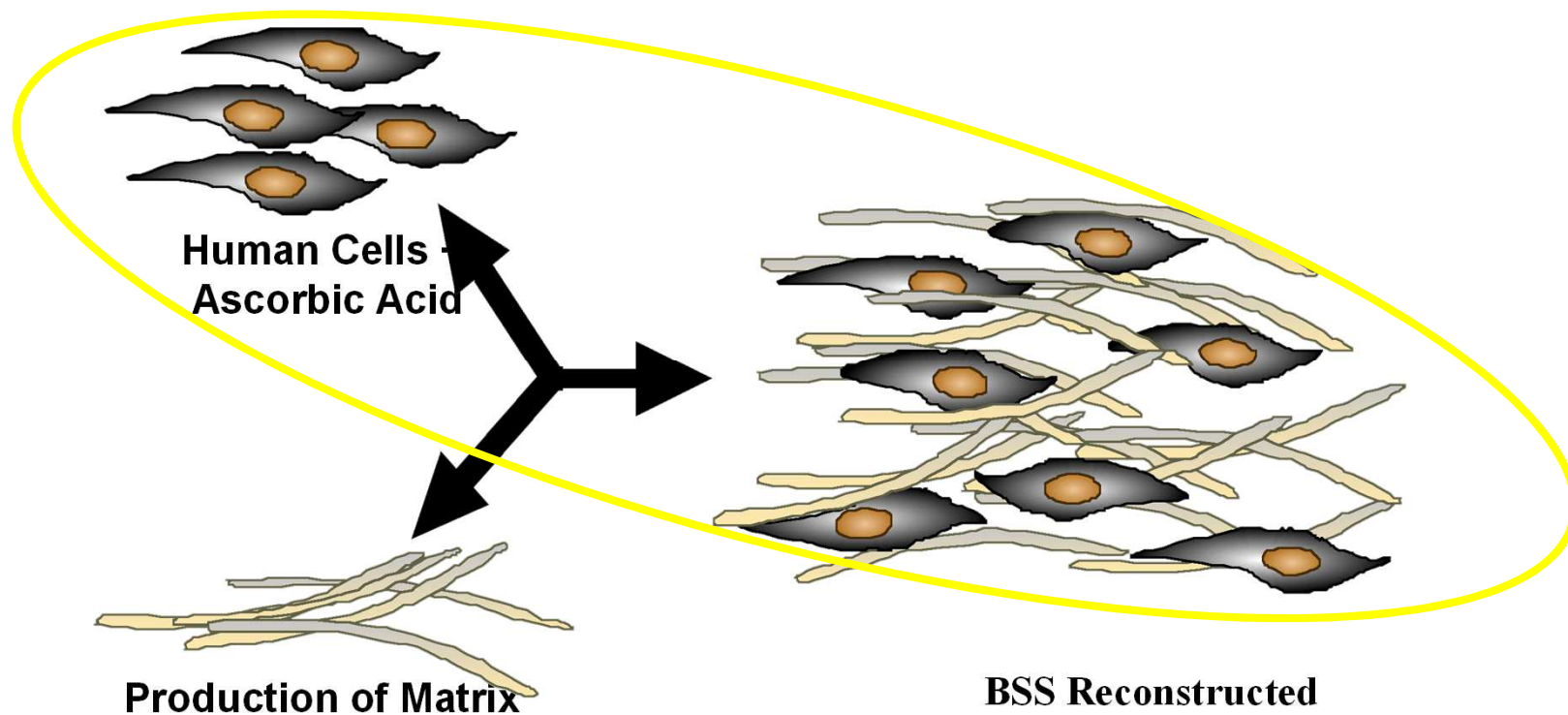
Epidermal sheet (CEA)



Epidermal layer 28 days post-graft

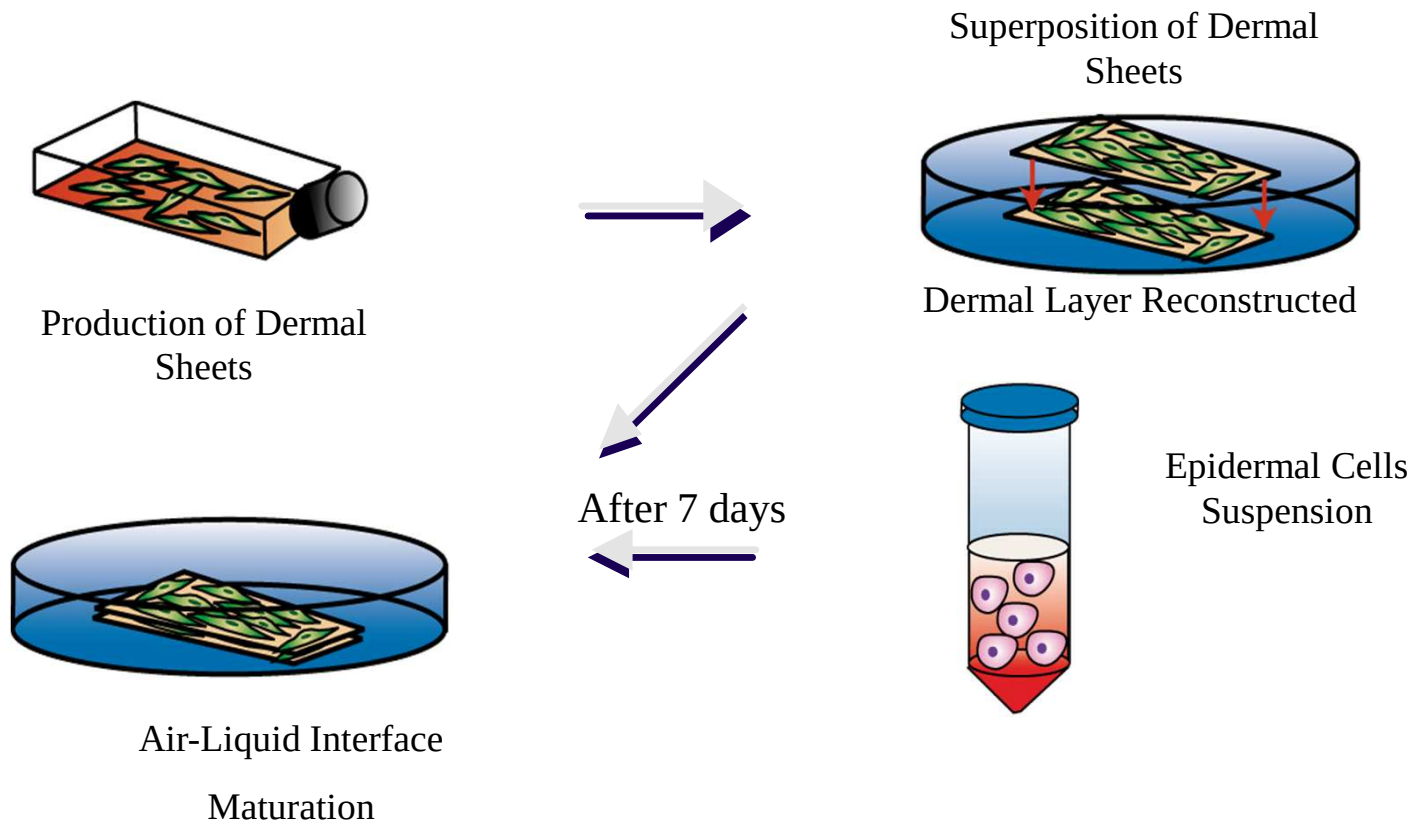
LOEX Engineered Skin Substitute

Reconstruction of Bilayered Skin Substitutes by Self-Assembly

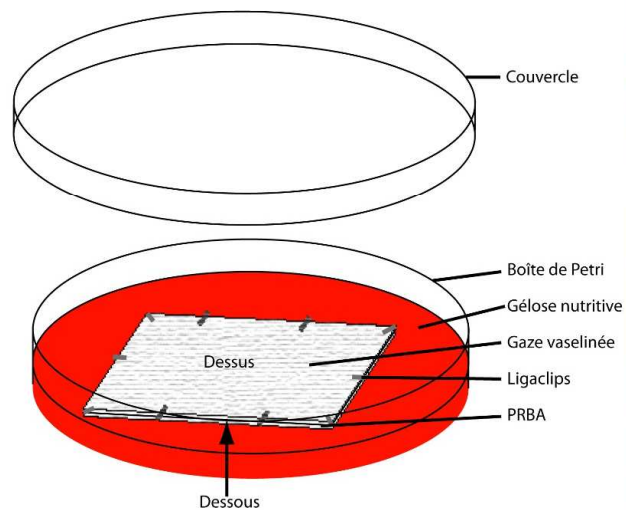


Production of BSS by Self-Assembly

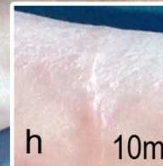
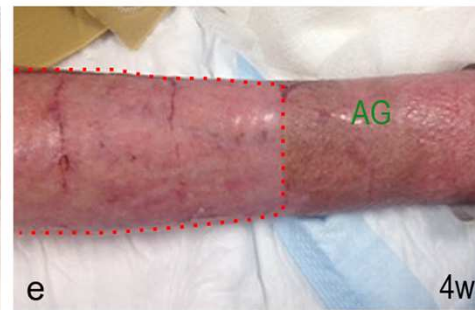
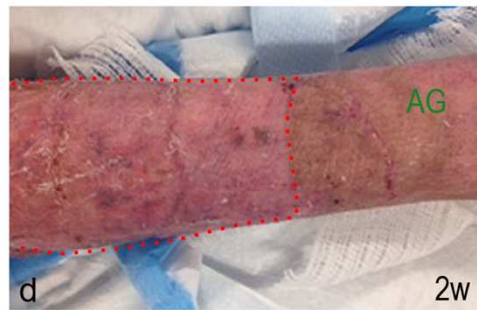
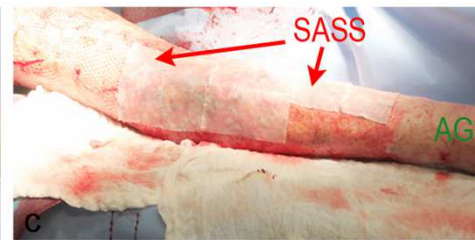
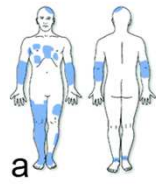
Courtesy of Dr. Lucie Germain, LOEX



The LOEX self-assembled skin substitute (SASS)



80% TBSA



L'expérience de Sainte-Justine avec les ESS-SASS

- Série de cas:

- 2 cas avec une brûlure massive pleine épaisseur
 - 92 % TBSA
 - 65% TBSA
- Traités avec LOEX SASS
 - Health Canada Special Access Program/ IDE Investigational Device Exemption

- But:

- Évaluer les **résultats cliniques de SASS** comme greffe autologue permanente dans les brûlures massives chez l'enfant.

Méthode

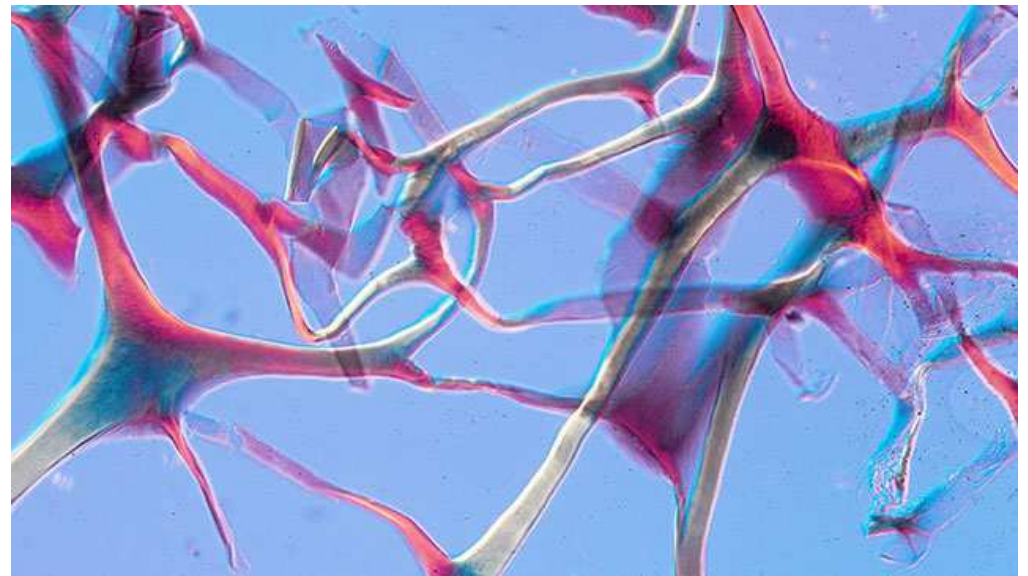
- Courte série de cas
 - Revue de dossiers
 - Base de données
 - **Données NBR** utilisés pour comparaisons lorsque possible
-
- Pas de cohorte historique récente de patients / survivants avec des brûlures de TBSA $\geq 60\%$ brûlure chirurgicales



Méthode

- **Caractéristiques des patients**
- **Sévérité de la lésion**
- **Traitement/chirurgies période aigue**
- **Outcomes cliniques court terme:**
 - Durée de traitement
 - Taux de prise des STSG, CEA and SASS
 - Complications globales
 - Skin-related
 - Others

- **Outcomes cliniques long terme:**
 - Contractures
 - Chirurgie relâchement contractures



Résultats:

Patients characteristics:

Patient #	Sex M/F	Age yo	Comorbidities	Risk Factors	BMI	Etiology	Delay admission
Patient 1	M	10	Asthma	ADHD	16,8	Thermal Flame	4,25h
Patient 2	M	13	Asthma	ODD	22	Thermal Flame	2,25h
Mean	100	11,5	Asthma 100%	ADHD/ODD 100%	19,4	Flame 100%	3,25h

Résultats:

Severity of Injury:

(a)

ABSI-SCORE (abbreviated burn severity index) [2]		
Parameters		score
TBSA (%)	1 - 10	1
	11 - 20	2
	21 - 30	3
	31 - 40	4
	41 - 50	5
	51 - 60	6
	61 - 70	7
	71 - 80	8
	81 - 90	9
	91 - 100	10
Age (years)	0 - 20	1
	21 - 40	2
	41 - 60	3
	61 - 80	4
	>80	5
Other parameters	Male	0
	Female	1
	Inhalation trauma	1
	3 burn	1
	Severe illness	1 per illness

(b)

Total score	Probability of death (%)
2 - 3	<1
4 - 5	>2
6 - 7	10 - 20
8 - 9	30 - 50
10 - 11	60 - 80
>11	>80

Patient #	TBSA %	FT TBSA %	Inhalation Injury	Trauma	ABSI Score	ABSI Survival	NBR Adjusted Mortality	Volume Repletion 24h Kg/%
Patient 1	92%	90%	+	-	13	<10%	68,2%	6,56 ml/kg/TBSA
Patient 2	65%	64%	+	+ MSK	10	20-40%	10,4%	5,9 ml/kg/TBSA
Mean	78,5%	77%	100% II	50%	11,5	20%	39,3%	6,23

Résultats:

Acute Care Surgeries:

Patient #	Escharotomies	Fasciotomies	Tracheostomy	AlloG	STSG	Integra	CEA	SASS	n
Patient 1	Multiple	-	1	10	6	1	4	6	18
Patient 2	Multiple	2	1	6	9	1	3	1	14
Mean	Multiple	-	-	8	7,5	1	3,5	3,5	16

Résultats:

Clinical outcomes:

Patient #	Dead or Alive	Last Surgery	Days on Ventilator	LOS	Delay SASS	Engraftment rate %			
						STSG	SASS	Integra	CEA
Patient 1	Alive	171	101	240	79	98%	100%	98%	< 70%
Patient 2	Alive	85	63	145	69	>90%	100%	80%	-
Mean	0% mortality	128	82	193	74	94%	100%	89%	-

Résultats complications

Skin-related complications:

Patient #	Donor Site		STSG		Integra/CEA		SASS	
	Infection	Delayed WH	Infection	Graft loss	Infection	Graft loss	Infection	Graft loss
Patient 1	0	0	0	0	0	2	0	0
Patient 2	1	1	0	2	0	1	0	0
Mean (%pt)	50%	50%	0	50%	0	100%	0	0

Other:

Patient #	Burn wound Infection	Pneumonia TBronchitis VAP	Urinary tract infection	Bacteremia Fungemia	Pressure Sores	Arrhyth	Finger amputation	HO	Delirium
Patient 1	0	1	1	1	1	0	0	0	0
Patient 2	1	1	0	1	1	1	1	1	1
Mean (%pt)	50%	100%	50%	100%	100%	50%	50%	50%	50%

Résultats:

F/U, Contractures and Releasing surgeries:

Patient #	F/U	Contractures		
		Site	Type of graft primarily used	Releasing Surgery
Patient 1	4 y	1.Hand 2. Anterior Neck 3. Thorax, anterior axilla	STSG STSG STSG	Releasing + SASS Releasing + SASS Releasing + SASS
Patient 2	2,5 y	1. Anterior Neck 2. Right hand 3. Left Lat. Neck	Integra+STSG STSG STSG	Parascap FF Z-Plasty Integra + STSG

Burn Survivors and QoL

Burns 2

Hypertrophic scarring: the greatest unmet challenge after burn injury

Celeste CFinnerty, Marc G Jeschke, Ludwik K Branski, Juan P Barret, Peter Dziewulski, David N Herndon

www.thelancet.com Vol 388 October 1, 2016

Review

Advances in Skin Substitutes—Potential of Tissue Engineered Skin for Facilitating Anti-Fibrotic Healing

Mathew Varkey¹, Jie Ding¹ and Edward E. Tredget^{1,2,*}

J. Funct. Biomater. **2015**, 6, 547-563; doi:10.3390/jfb6030547



Nouveaux points d'intérêt... Qualité de vie après la brûlure

- Depuis une quinzaine d'années...
 - **Shift progressif** des points d'intérêt en petits et grands brûlés
 - De la **survie/%mortalité** (overall 3%) → Intérêt sur la **qualité de vie** des survivants de petites et grandes brûlures
- Parmi les défis actuels:
 - **L'amélioration des cicatrices**
 - **L'amélioration des séquelles psychologiques et de la réinsertion scolaire/sociale.**

Amélioration de l'aspect des cicatrices

- Possible rôle des **substituts cutanés** durant les chirurgies de la phase aigue et en reconstruction;
- **Traitements multimodaux** post-brûlure (préventifs et curatifs):
 - Compression
 - Gels occlusifs/silicone
 - Triamcinolone
 - etc
- **Lasers** comme traitement émergent
 - PDL
 - CO2 fractionnel et ablatif



Amélioration de l'aspect des cicatrices...

Comment documenter les outcomes?

Figure 1. Modified Vancouver Scar Scale (5, 6)

Burn Scar Assessment:

Pigmentation (M):

- 0 Normal
- 1 Hypopigmented
- 2 Mixed
- 3 Hyperpigmented

Pliability (P):

- 0 Normal
- 1 Supple – flexible with minimal resistance
- 2 Yielding – giving way to pressure
- 3 Firm – inflexible, not easily moved, resistant to manual pressure
- 4 Banding – rope-like tissue that blanches with extension of the scar
- 5 Contracture – permanent shortening of scar, producing deformity or distortion

Height (H):

- 0 Flat
- 1 <2mm
- 2 2–5mm
- 3 >5mm

Vascularity (V):

- 0 Normal
- 1 Pink
- 2 Red
- 3 Purple

*Pain:

- 0 Non
- 1 Occasional
- 2 Requiring medication

*Pruritus:

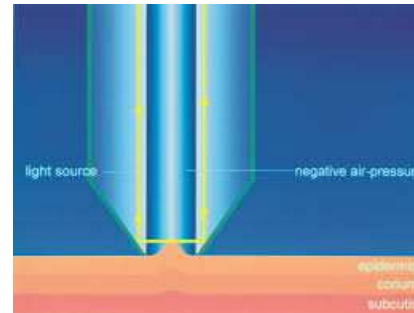
- 0 Non
- 1 Occasional
- 2 Requiring medication

*not included in phase one

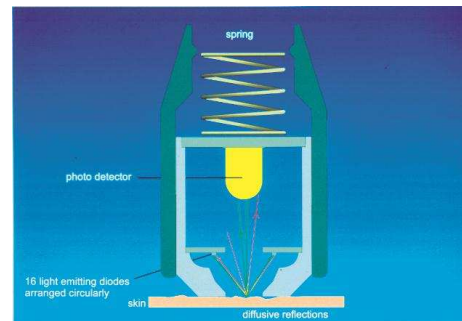
- **Peu d'évidence** de haut niveau
- Outcome/**Quantification** de la **cicatrice** problématique
- **Variabilité** intra et inter observateurs élevée avec mVSS
- Palliation de ce déficit:
 - **Validation d'outils objectifs**

Les nouveaux outils de quantification des cicatrices

- mVSS:
 - Pliabilité → **Cutomètre**
 - Pigmentation/Vascularité → **Mexamètre**
 - Épaisseur → **Dermascan**
- Dre Bernadette Nedelec, Mtl



Cutometer in use



3D Compact config.
Dermascan device



A new CO₂ laser technique for the treatment of pediatric hypertrophic burn scars

An observational study

Tomasz Ządkowski, MD, PhD^{a,*}, Paweł Nachulewicz, MD, PhD^a, Maciej Mazgaj, MD^b, Magdalena Woźniak, MD, PhD^b, Czesław Cielecki, MD, PhD^a, Andrzej Paweł Wieczorek, Iwona Beń-Skowronek, MD, PhD^c

JBUR-5073; No. of Pages 10

ARTICLE IN PRESS

BURNS XXX (2016) XXX–XXX

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/burns

Ablative fractional CO₂ laser for burn scar reconstruction: An extensive subjective and objective short-term outcome analysis of a prospective treatment cohort

Andrea C. Issler-Fisher^{a,*}, Oliver M. Fisher^b, Ania O. Smialkowski^a, Frank Li^a, Constant P. van Schalkwyk^a, Peter Haertsch^a, Peter K.M. Maitz^{a,c,d}

^a Burns Unit, Concord Repatriation General Hospital, Sydney, Australia

^b St. Vincent's Centre for Applied Medical Research, Sydney, Australia

^c ANZAC Research Institute, Concord Repatriation General Hospital, Sydney, Australia

^d University of Sydney, Sydney, Australia

PAPERS OF THE 134TH ASA ANNUAL MEETING

Laser Resurfacing and Remodeling of Hypertrophic Burn Scars The Results of a Large, Prospective, Before-After Cohort Study, With Long-term Follow-up

C. Scott Hultman, MD, MBA, FACS,*† Jonathan S. Friedstat, MD,* Renee E. Edkins, DNP, NP,*†
Bruce A. Cairns, MD, FACS,† and Anthony A. Meyer, MD, PhD†

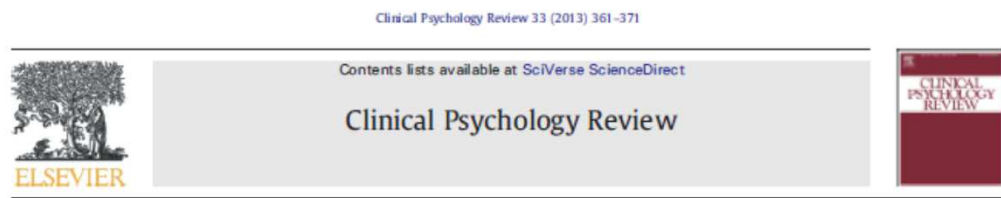
CLINICAL PAPER

Incidence and Management of Adverse Events After the Use of Laser Therapies for the Treatment of Hypertrophic Burn Scars

John L. Clayton, MD, PhD,* Renee Edkins, RN, MS,*† Bruce A. Cairns, MD, FACS,†
and Charles Scott Hultman, MD, MBA, FACS*†

Les enfants brûlés vont... aussi bien que leurs parents... Séquelles psychologiques

- Séquelles psychologiques chez petits et grands brûlés:
 - Émergence de littérature depuis 2011
 - 25-35% patients symptomatiques à 1 mois
 - 5-10% patients symptomatiques à 6 mois
- Relation entre les séquelles parents et enfants
 - Émergence de littérature depuis quelques années



Psychological consequences of pediatric burns from a child and family perspective: A review of the empirical literature[☆]

Anne Bakker^{a,*}, Koen J.P. Maertens^{b,c}, Maarten J.M. Van Son^d, Nancy E.E. Van Loey^{a,d}

^a Association of Dutch Burn Centres, Beverwijk, The Netherlands

^b Ocare, Organisation for Burns, Scar After-Care & Research, Antwerp, Belgium

^c Department of Clinical and Lifespan Psychology, Vrije Universiteit Brussel, Brussels, Belgium

^d Department of Clinical and Health Psychology, Utrecht University, Utrecht, The Netherlands



Quality of life after burns in childhood (5–15 years): Children experience substantial problems

M.E. van Baar^{a,b,*}, S. Polinder^c, M.L. Essink-Bot^d, N.E.E. van Loey^a, I.M.M.H. Oen^b, J. Dokter^b, H. Boxma^b, E.F. van Beeck^c

^a Association of Dutch Burn Centres, Maastricht Hospital, Rotterdam, The Netherlands

^b Burn Centre Maastricht Hospital, Rotterdam, The Netherlands

^c Department of Public Health, Erasmus MC, University Medical Center Rotterdam, The Netherlands

Le soutien aux parents... un aspect non négligeable

Review Article

Posttraumatic stress disorder in children and their parents following admission to the pediatric intensive care unit: A review

Lara P. Nelson, MD; Jeffrey I. Gold, PhD

JOURNAL OF CHILD AND ADOLESCENT PSYCHOPHARMACOLOGY
Volume 24, Number 1, 2014
© Mary Ann Liebert, Inc.
Pp. 9–17
DOI: 10.1089/cap.2013.0066

Prospective Evaluation of Parent Distress Following Pediatric Burns and Identification of Risk Factors for Young Child and Parent Posttraumatic Stress Disorder

Alexandra C. De Young, PhD,^{1,2} Joan Hendrikz, PGDip,¹ Justin A. Kenardy PhD,¹
Vanessa E. Cobham, PhD,³ and Roy M. Kimble, MD^{2,4}

Objectifs présentation

- Nouveaux enjeux et points d'intérêt dans le traitement des brûlés;
- Composantes des programmes accrédités – « Verified Burn Centers »;
ABA – American Burn Association
Verification Committee
- Objectifs à atteindre en vue d'une accréditation

Accréditation d'un programme de brûlés

- Plusieurs avantages:
 - Reconnaissance et enveloppe budgétaire!
 - Cap sur les plus hauts standards de qualité
 - Engagement institutionnel
 - Facilite réseautage/recherche autres centres

Critères de Vérification ABA – American Burn Association ... INESSS...

- Toutes les composantes du continuum des soins
 - En amont
 - En aval
- Burn Care System
- Structure de l'organisation



Guidelines for the
Operation of
Burn Centers



Critères de Vérification ABA – American Burn Association ... INESSS...

Burn Care System

A burn care system is a coordinated component of an emergency medical services (EMS) system that encompasses one or more burn centers and features communication links to and triage-transfer protocols

between health care facilities, EMS prehospital personnel, and transportation services.

- The burn center must have a medical and an administrative commitment to the care of patients with burns (CD 14-1).
- The burn center must have written guidelines for the triage, treatment, and transfer of burned patients from other facilities (CD 14-2).
- The burn center hospital must maintain current accreditation by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) (CD 14-3).

Burn Center Referral Criteria

A burn center may treat adults, children, or both.

Burn injuries that should be referred to a burn center include the following:

1. Partial-thickness burns of greater than 10% of the total body surface area
2. Burns that involve the face, hands, feet, genitalia, perineum, or major joints
3. Third-degree burns in any age group
4. Electrical burns, including lightning injury
5. Chemical burns
6. Inhalation injury
7. Burn injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality
8. Any patients with burns and concomitant trauma (such as fractures) in which the burn injury poses the greatest risk of morbidity or mortality. In such cases, if the trauma poses the greater immediate risk, the patient's condition may be stabilized initially in a trauma center before transfer to a burn center. Physician judgment will be necessary in such situations and should be in concert with the regional medical control plan and triage protocols.
9. Burned children in hospitals without qualified personnel or equipment for the care of children
10. Burn injury in patients who will require special social, emotional, or rehabilitative intervention

Critères de Vérification ABA – American Burn Association ... INESSS...

Organizational Structure

Documentation of Policies and Procedures

- The burn center must maintain an organizational chart relating personnel within the burn center and the hospital (CD 14-9).
- The burn center must maintain an appropriate policy and procedure manual that is reviewed annually by the burn center director and the nurse manager (CD 14-10).

Guidelines for the Operation of Burn Centers



The policy and procedure manual must contain policies addressing the following (CD 14-11):

1. Administration of the burn center
2. Staffing of the burn center
3. Criteria for admission to the burn center by the burn services
4. Use of burn center beds by other medical or surgical services
5. Criteria for discharge and follow-up care
6. Availability of beds and the transfer of burn patients to other medical or surgical units within the hospital
7. Care of patients with burns in areas of the burn center hospital other than the burn center

Critères de Vérification ABA – American Burn Association ... INESSS...

Burn Program

The burn center hospital must formally establish and maintain an organized burn program that is responsible for coordinating the care of burned patients (CD 14-12).

Consistency of Protocol and Reporting

- The burn center must participate in the American Burn Association's (ABA's) National Burn Repository, either through ABA's TRACS or by providing the minimum acceptable record information (Table 1) in a computer-exported format compatible with the ABA National Burn Repository (CD 14-13).
- This database must include all patients who are admitted to the burn center hospital for acute burn care treatment (CD 14-14).

Admission and Census Levels for the Burn Center Hospital

- The burn center must admit an average of 100 or more patients annually, with acute burn injuries averaged over 3 years (CD 14-15).
- The burn center must maintain an average daily census of 3 or more patients with acute burn injuries

**Table 1. Minimum Acceptable Record:
National Burn Repository***

• Reporting hospital number • Number of operating room visits • Number of procedures performed • Patient sex • Race • Cause of death • State in which injury occurred • Patient age (for patients younger than 90 years) • Year of injury • Year of arrival at reporting hospital • Description of event (free text) • Site at which injury occurred (E849 code) • Etiology of injury code (E-code)	• Body areas injured (Lund and Browder 19 areas × 6 age categories) • Total burn size • Total deep burn • Inhalation injury • ICD-9 diagnosis codes • Total hospital days • Hospital discharge disposition • Primary payer source • DRG code • Circumstances of injury • Discharge status (alive or dead) • Year of discharge or death • Total ICU days • Interhospital transfer to your hospital
---	---

Critères de Vérification ABA – American Burn Association ... INESSS...

AMERICAN BURN ASSOCIATION – BURN CENTER VERIFICATION REVIEW PROGRAM **Updated as of 2/16/15** **Verification Criteria -EFFECTIVE JANUARY 1, 2015**

BURN UNIT VOLUME

The burn center must have a sufficient volume of acute burn admissions on an ongoing basis to demonstrate to the site reviewers and to the Verification Review Committee that the burn center has a quality burn care program; centers with less than 100 admissions per year should anticipate that site reviewers will audit patient charts for demonstration of quality of care.

80% of admissions to the center must constitute acute burn injuries; for centers with numbers less than 100 admissions per year (including observation status patients) the center can consider that 5 new patient outpatients equates to 1 inpatient.

Centers caring for pediatric patients must demonstrate facilities, protocols and personnel specific to the care of critically ill pediatric patients; centers with less than 100 admissions per year should anticipate that site reviewers will audit charts for demonstration of quality of care.

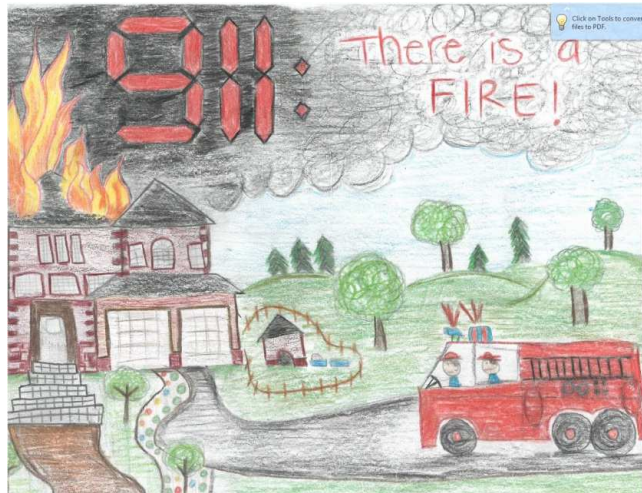
The burn center maintains an average daily census of 3 or more patients with acute burns.

Critères de Vérification ABA – American Burn Association ... INESSS...

Performance Improvement Program

Policies and Procedures

- The burn program must have a performance improvement program that is multidisciplinary (CD 14-60).
- The burn center director must be responsible for the performance improvement program (CD 14-61).



• Inclus:

- Guidelines M et M
- Étude des complications et prise en charge
- Conférence hebdomadaire interdisciplinaire prise en charge pts hospitalisés
- Audit annuelle sur performance
- Programme de prévention infections

Critères de Vérification ABA – American Burn Association ... INESSS...

Autres programmes

Continuité des Soins- Réadaptation

Continuity of Care Program

The burn center must provide the following services (CD 14-73):

1. Recreational therapy for children cared for in the unit
2. Patient and family education in rehabilitation programs
3. Support for family members or other significant persons
4. Coordinated discharge planning
5. Follow-up after hospital discharge
6. Access to community resources
7. Evaluation of the patient's physical, psychological, developmental, and vocational status
8. Planning for future rehabilitative and reconstructive needs

Aussi...

- Programme d'éducation;
- Programme de prévention
- Programme de recherche





American Burn Association

A New Initiative to Enhance Burn and Wound Care



Modeled after the American College of Surgeons (ACS) National Surgery Quality Improvement Program (NSQIP) and the ACS Trauma Quality Improvement Program (TQIP), neither of which address patients with burn injuries, BQIP will strengthen the ABA National Burn Repository of clinical data on acute burn care admissions.

By stratifying outcomes data according to unique burn-specific characteristics and risk factors, BQIP will allow the burn community to identify areas for clinical improvement, gaps in knowledge, and research opportunities. The ABA will update the National Burn Repository to include quality metrics and patient safety benchmarks in five clinical areas identified at the ABA's Burn Quality Consensus Conference in February 2012: wound healing, resuscitation, nutrition, psychological outcomes, and functional outcomes.

Éléments importants accréditation:

- Documentation des **processus** tout au long du continuum des soins
- Documentation des **résultats/outcomes de tous les patients via une banque de données complète**
 - Performance et benchmarking
 - Programme de qualité et indicateurs de performance
 - Taux mortalité stratifié TBSA/âge
 - LOS/%TBSA objectif 1jr/TBSA
 - Taux de complications
- **Masse minimale critique** pour maintien des compétences du programme

Objectifs présentation

- Nouveaux enjeux et points d'intérêt dans le traitement des brûlés;
- Composantes des programmes accrédités – « Verified Burn Centers »;
ABA – American Burn Association
Verification Committee
- Objectifs à atteindre en vue d'une accréditation

Discussion Massive Burn HSJ Case Series

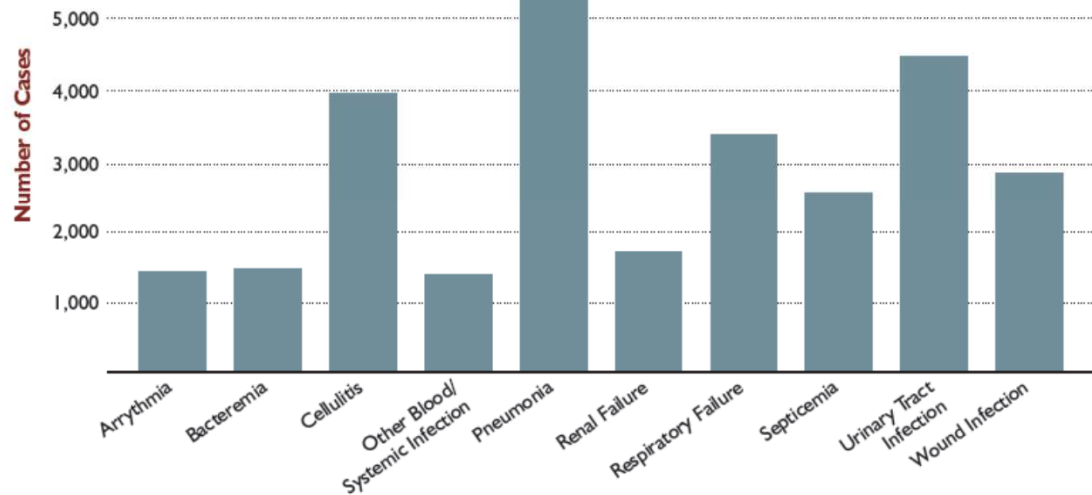
Comparison HSJ and NBR data:

Data	HSJ	NBR			
Mortality Rate (age /TBSA adjusted)	0	39,3%			
		60 - 69.9	69	8	10.4
		70 - 79.9	51	8	13.6
		80 - 89.9	23	21	47.7
		> 90	7	15	68.2
LOS	128 (193)	63 (alive and dead)			
		60 - 69.9	77		67.9+/-5.3
		70 - 79.9	59		60.6+/-6.6
		80 - 89.9	44		60.0+/-9.6
		> 90	22		29.1+/-13.9

Discussion- Complication rates:

COMPLICATIONS: FREQUENCY OF TOP TEN CLINICALLY RELEVANT COMPLICATIONS

Figure 17

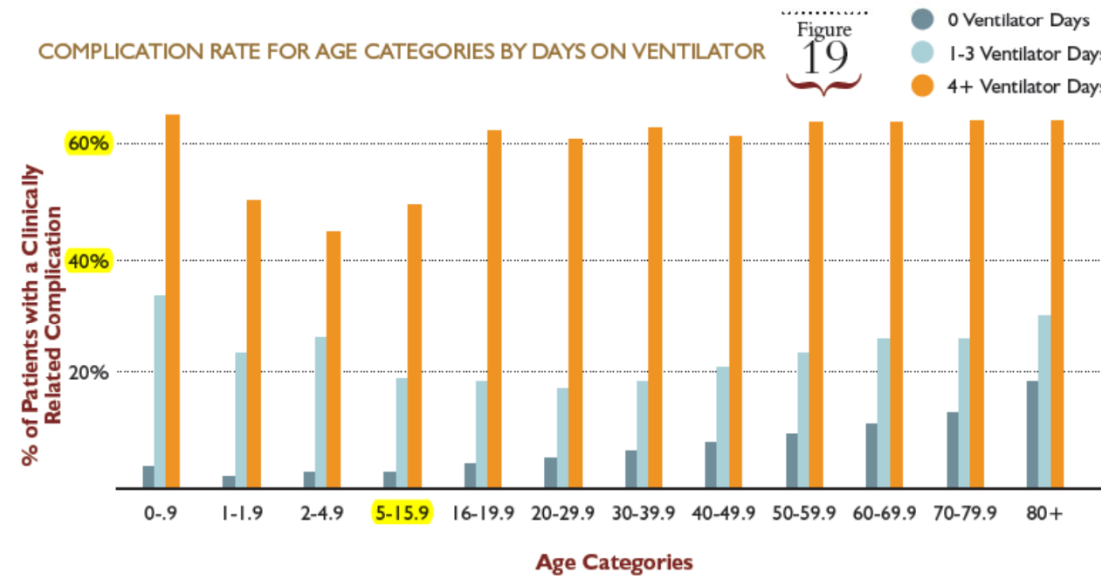


Total N=200,867 (Excluding 4,166 cases from non ABA burn registry software centers)



COMPLICATION RATE FOR AGE CATEGORIES BY DAYS ON VENTILATOR

Figure 19



Total N=200,867 (Excluding 4,166 cases from non ABA burn registry software centers or unknown/missing ventilator days)

Skin Substitutes Cost

Skin Substitute	Cost each cm ² (Province of Quebec)
Allograft	1,75 CAD
Integra CANADA	8,77-42 CAD
CEA	6,25 CAD
SASS (LOEX)	31, 25 CAD
Permaderm	48 USD
Apligraf	44, 30 USD

Conclusion

- Self-Assembly Skin Substitute (SASS) was **successfull for wound coverage in life-threatening pediatric burn injury**
- Possible **impact on survival** rates
- Engraftment rate was superior to STSG/other SS alternatives
- Pediatric Burn Reconstruction with **stable results over time**
- Cost lower than similar SS
- Delay might be decreased by a new strategy and **improve cost-effectiveness**

Future Direction

TISSUE ENGINEERING: Part C
Volume 21, Number 12, 2015
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DOI: 10.1089/ten.tec.2015.0258



METHODS ARTICLE

Production of a Bilayered Self-Assembled Skin Substitute Using a Tissue-Engineered Acellular Dermal Matrix

Chanel Beaudoin Cloutier, MD,¹⁻³ Rina Guignard, MSc,^{1,2} Geneviève Bernard, MSc,^{1,2}
Robert Gauvin, PEng, PhD,^{1,2,4} Danielle Larouche, PhD,^{1,2} Amélie Lavoie, MSc,^{1,2} Dan Lacroix, PhD,^{1,2}
Véronique J. Moulin, PhD,^{1,2} Lucie Germain, PhD,^{1,2} and François A. Auger, MD^{1,2}

Documentation des données et Indicateurs de performance

- Taux de mortalité de **9% (8/88)** pour les patients admis aux soins intensifs et brûlures
- Brûlures de **plus de 30%**, le taux de mortalité à **11,7% (2/17)**.
- **Pour la période du 2005-01-01 au 2014-12-31 (période de 10 ans).**

Tous types de brûlures: 623 patients (62 patients/an)

Tous types de brûlures et soins intensifs: 88 patients

Tous types de brûlures et décès: 8 patients

Brûlures de plus de 30%: 17 patients

Brûlures de plus de 30% et soins intensifs: 17 patients

Brûlures de plus de 30% et décès: 2 décès

by Age Group Birth to .9

Table 25 LIVED/DIED BY BURN GROUP SIZE (% TBSA)

	Lived	Died	
%TBSA	Cases	Cases	Mortality Rate
0.1 - 9.9	3,400	0	0.0
10 - 19.9	474	1	0.2
20 - 29.9	113	3	2.6
30 - 39.9	39	5	11.4
40 - 49.9	20	4	16.7
50 - 59.9	12	1	7.7
60 - 69.9	1	6	85.7
70 - 79.9	3	0	0.0
80 - 89.9	1	0	0.0
> 90	0	0	
Subtotal	4,063	20	0.5
Missing or 0%	1,205	38	3.1
TOTAL	5,268	58	1.1

Total N=5,326

by Age Group 1 - 1.9

Table 33 LIVED/DIED BY BURN GROUP SIZE (% TBSA)

	Lived	Died	
%TBSA	Cases	Cases	Mortality Rate
0.1 - 9.9	12,921	0	0.0
10 - 19.9	1,990	6	0.3
20 - 29.9	320	1	0.3
30 - 39.9	110	0	0.0
40 - 49.9	47	3	6.0
50 - 59.9	16	4	20.0
60 - 69.9	17	5	22.7
70 - 79.9	9	1	10.0
80 - 89.9	3	1	25.0
> 90	1	2	66.7
Subtotal	15,434	23	0.1
Missing or 0%	1,199	7	0.6
TOTAL	16,633	30	0.2

Total N=16,663

by Age Group 2 - 4.9

Table 41 LIVED/DIED BY BURN GROUP SIZE (% TBSA)

	Lived	Died	
%TBSA	Cases	Cases	Mortality Rate
0.1 - 9.9	11,239	14	0.1
10 - 19.9	1,785	4	0.2
20 - 29.9	424	4	0.9
30 - 39.9	197	6	3.0
40 - 49.9	96	9	8.6
50 - 59.9	58	12	17.1
60 - 69.9	35	13	27.1
70 - 79.9	15	4	21.1
80 - 89.9	9	12	57.1
> 90	9	12	57.1
Subtotal	13,867	90	0.6
Missing or 0%	1,485	24	1.6
TOTAL	15,352	114	0.7

Total N=15,466

by Age Group 5 - 15.9

Table 49 LIVED/DIED BY BURN GROUP SIZE (% TBSA)

	Lived	Died	
%TBSA	Cases	Cases	Mortality Rate
0.1 - 9.9	12,985	11	0.1
10 - 19.9	2,073	7	0.3
20 - 29.9	590	6	1.0
30 - 39.9	294	3	1.0
40 - 49.9	166	10	5.7
50 - 59.9	88	6	6.4
60 - 69.9	69	8	10.4
70 - 79.9	51	8	13.6
80 - 89.9	23	21	47.7
> 90	7	15	68.2
Subtotal	16,346	95	0.6
Missing or 0%	2,031	38	1.8
TOTAL	18,377.0	133.0	0.7

Total N=18,510

Documentation des données HSJ

Brûlures avec mention d'accident lors de l'admission pour la période
du 1er janvier 2015 au 31 décembre 2015

***Note: du 20 septembre 2015 au 31 décembre 2015, les dossiers
ne sont pas tous finalisés.***

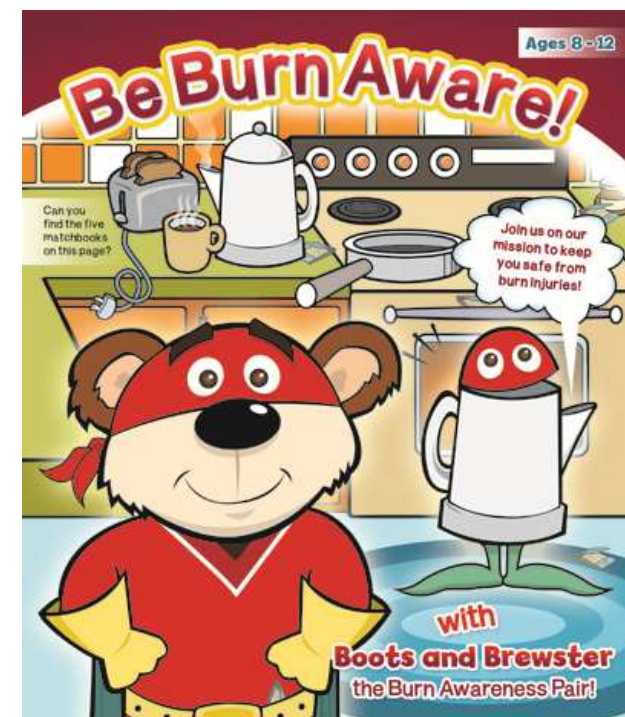
Type de soins	Nombre de patients	Nombre d'hospitalisations	Décès
Courte durée	57	62	1
Soins en chirurgie d'un jour	13	13	0
Grand total	66	75	1

Attention: la somme des patients en courte durée + chirurgie d'un jour = 70 mais 4 patients en courte durée sont revenus en chirurgie d'un jour, donc un grand total de 66 patients

Documentation des données HSJ

Selon le pourcentage de l'atteinte corporelle par type de soins	Nombre de patients	Nombre d'hospitalisations	
Courte durée	53	58	
Brûlures couvrant entre 10 et 19% de la surface du corps, avec moins de 10% de la surface atteinte par des brûlures au troisième degré	1	1	
Brûlures couvrant entre 10 et 19% de la surface du corps, avec un pourcentage nul ou non précisé de brûlure au troisième degré	8	8	
Brûlures couvrant entre 20 et 29% de la surface du corps, avec un pourcentage nul ou non précisé de brûlure au troisième degré	2	3	
Brûlures couvrant entre 40 et 49% de la surface du corps, avec un pourcentage nul ou non précisé de brûlure au troisième degré	1	1	
Brûlures couvrant entre 60 et 69% de la surface du corps, avec un pourcentage nul ou non précisé de brûlure au troisième degré	1	1	
Brûlures couvrant moins de 10% de la surface du corps, avec moins de 10% de la surface atteinte par une brûlure au troisième degré	8	10	
Brûlures couvrant moins de 10% de la surface du corps, avec un pourcentage nul ou non précisé de brûlure au troisième degré	32	34	
Soins en chirurgie d'un jour	12	12	
Brûlures couvrant moins de 10% de la surface du corps, avec moins de 10% de la surface atteinte par une brûlure au troisième degré	4	4	
Brûlures couvrant moins de 10% de la surface du corps, avec un pourcentage nul ou non précisé de brûlure au troisième degré	8	8	
Grand total	61	70	

Attention: Le total des hospitalisations diffère du tableau ci-haut car le code qui identifie le pourcentage de l'atteinte corporelle n'est pas utilisé pour les brûlures des voies respiratoires et des organes internes (tube digestif) sauf si mention de brûlure sur d'autres sites pour le même épisode de soins. Voir les diagnostics en pris



Burn Awareness
Preventing Burn Injuries

kidzsmart.com

Documentation des données et interprétation:

Âge / TBSA%	TBSA > 30% avec SIP TBSA précise?	TBSA < 30% avec SIP	TBSA < 30% sans SIP
Groupe âge inconnu	2/17=11,76%	6/71=8,45%	0/535 ?
Comparatif NBR (11% mortalité âge/TBSA %)	2-4,9ans; 50-59% TBSA Ou 5-15,9ans;60-69%	Devrait se situer autour des 1%	

Volumétrie totale du programme

Patients externes (objectif 200 patients)

	nombres de visites
2012-13	90
2013-14	66
2014-15	41
2015-16	96 (jusqu'au 15 octobre 2015)

Statistiques pour les patients brûlés			
Type de clinique	Année financière	1er total	2e total
Chirurgie plastique (commentaire : brûlés)	2013-2014	469	535
Brûlés	2013-2014	66	
Chirurgie plastique (commentaire : brûlés)	2014-2015	518	634
Brûlés	2014-2015	116	
Chirurgie plastique (commentaire : brûlés)	2015-2016	318	426
Brûlés	2015-2016	108	

Documenter la volumétrie par une base de données

- Bases de données Brûlés pédiatriques du CHU-Sainte-Justine pour la clientèle externe :
- Sections de la base de données :
 - Données épidémiologiques sur le patient, provenance, etc.
 - Données sur le traumatisme
 - Résultats cliniques, complications
 - Outcomes long terme, suivi
 - Utilisation des ressources, coûts
- Buts:
 - Volumétrie
 - Performance
 - Outcomes cliniques
 - Coût-efficacité
 - Prévention



Données démographiques

1. Race	Blanc, noir, asiatique, amérindien, latino Canadienne, Française, ... les plus fréquentes, item autre
2. Nationalité d'origine	

1. Age	X années y mois (x = 1-18 et
1. Provenance	Ville (code à définir), provinc
1. Hôpital/clinique référant	Codes à définir
1. Comorbidités et facteurs de risque	TDAH, autres

Données épidémiologiques en lien avec le traumatisme

1. Type de brûlure	Thermique, chimique (produit, concentration, alcalin ou base, ph), électrique (voltage), par radiation
1. Étiologie de la brûlure thermique	Ébouillamment, brûlure de contact, flamme, friction, agression
1. Lieu du trauma	Maison, lieu récréatif, lieu publique, école
1. Autre trauma associé	Fracture (site), lacération, atteinte ophtalmique
1. % TBSA (2 ^{ième} et 3 ^{ième} degré)	X % a 2 ^{ième} superficiel, b 2 ^{ième} hétérogène, c 2 ^{ième} profond, d 3 ^{ième}
1. Zones atteintes et % relatif	Scalp, face, cou, épaule, bras, coude, AB, poignet, main, doigts, thorax, abdomen, dos, fesses, OGE, cuisse, jambe, pied
1. PEM	Investigation pédiatrie socio juridique (O/N) Si oui, confirmé O/N

•Données sur résultats cliniques et complications

Résultats cliniques		
1.	Date de guérison et PBD	Calendrier et x jours
1.	Anomalies pigmentaires	O/N sites hyper ou hypopigmentation
1.	Cicatrices	O/N sites VSS
1.	Retour vie normale	Retour école/Retour garderie/Activités sportives
1.	Dépistage PTSD	Questionnaire de dépistage rapide
1.	Amplitudes articulaires	
Complications		
1.	Infection clinique de plaies	
1.	Ankyloses articulaires	
1.	Psychopathologie	Hypervigilance/ isolement,?
1.	Cicatrices non esthétiques	O/N, lieu

•Coûts des traitements, agents payeurs et utilisation des ressources

Dates visites clinique avec ressources utilisées	Ressources humaines : ergo, physio, clinique de dlr, T.S., infirmière liaison pour CLSC Ressources matériels : pansements et cultures de plaies
N total de visite	
N total des différents types de ressources	
Total Pansements utilisés	
Total cultures	
Agents payeurs	Liste Tina

Objectifs à atteindre en vue d'une accréditation...

• **Multiple forces CHU Sainte-Justine**

- Culture de traumatologie
- Centre tertiaire accrédité/Ressources
- Centre désigné/ Centre excellence traumatologie
- Équipe dynamique, volontaire et interdisciplinaire
- Approche evidence-based et systématique
- Historique expertise prise en charge des brûlés
- Équipe interdisciplinaire dévouée

• **Forces à développer**

- Désignation intra hospitalière d'une structure de soins en brûlés
- Documentation de la volumétrie et de des résultats cliniques
- Benchmarking des résultats et documentation des indicateurs de qualité reconnus

Merci spécial...

- Au CHU Sainte-Justine
 - Département chirurgie et au service de traumatologie
 - Service de chirurgie plastique
 - Clinique de la douleur
 - Tina, archives, informatique, photo médicale
 - Équipe interdisciplinaire géniale!
 - Yannick

PREVENT SCALDS IN THE KITCHEN



Personalized 3D models for accurately engineering assessing body morphologies - engineering



Le génie pour l'industrie

Jacques De Guise, PhD



Adrien Desbois



Merci!