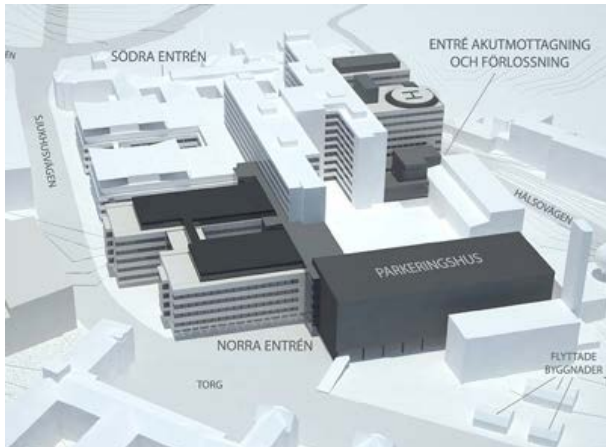


# Development of a National Burn Centre (1 of 2)

Folke Sjöberg, Professor, M.D., Director the Burn Center,  
Linköping University Hospital,  
Linköping,  
Sweden

## COBIS Education Event

# No Conflict of interest to declare



**Linköping University Hospital, Linköping Sweden**

**Care of Burns  
In Scotland**

# COBIS Education Event

Sweden 10 miljon  
Finland 5,5 miljon  
Norway 5,3 miljon  
Denmark 5,7 miljon

Burn Centers



## Present situation in Scandinavia

Care of Burns  
In Scotland

## Historic and important events

1. Incidence decrease
2. Reduced Length of Stay (LOS)
3. Outpatient care
4. Decreased Mortality
5. Significant treatment improvements



After 10 years Sweden decides to centralize burn care

In 2010:

5 Burn care providers are reduced to 2

Issues:

1. Where and who?
2. Criteria for centralized care option
3. Financing

**Table 3 – Number of patients admitted to hospital with burns in 1987–2004/million population.**

Year	Male	Female	Total
1987	275	110	191
1988	257	103	179
1989	270	101	183
1990	237	102	168
1991	237	99	168
1992	234	96	165
1993	235	89	161
1994	230	100	164
1995	228	99	163
1996	208	93	150
1997	210	97	153
1998	208	97	152
1999	208	89	145
2000	182	85	133
2001	183	84	133
2002	182	99	140
2003	174	94	133
2004	179	84	131
Mean	96	219	156
Median	97	219	157
Range	84–110	174–275	131–191

131/191= 68%

Decrease 30% 20 years!

available at [www.sciencedirect.com](http://www.sciencedirect.com)

ELSEVIER ScienceDirect journal homepage: [www.elsevier.com/locate/burns](http://www.elsevier.com/locate/burns)

**BURNS**

**Burns in Sweden: An analysis of 24 538 cases during the period 1987–2004**

Emma Åkerlund, Fredrik R.M. Huss\*, Folke Sjöberg  
 Department of Plastic Surgery, Hand Surgery, and Burns, University Hospital of Linköping, Linköping, Sweden



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available at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

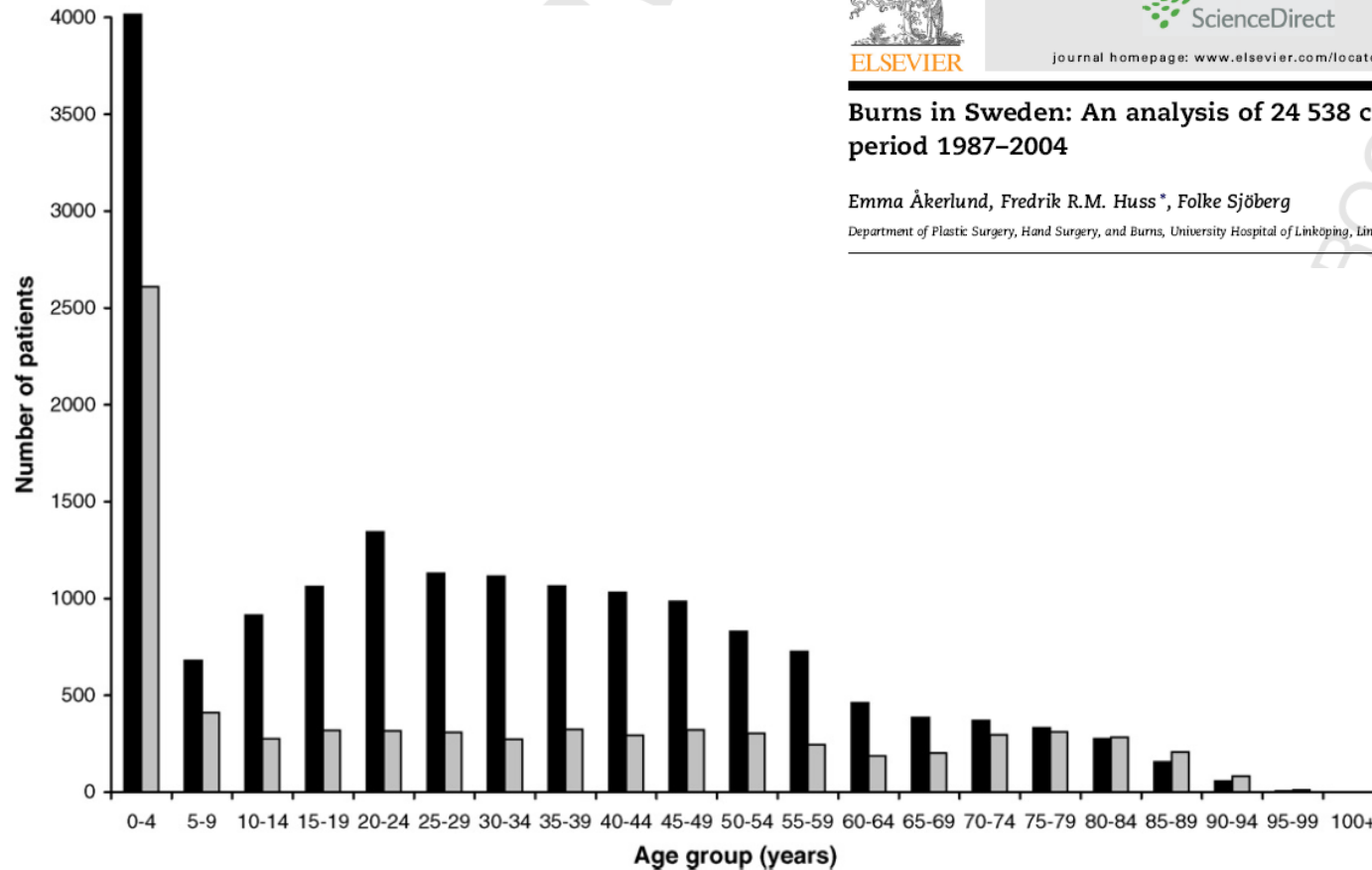
journal homepage: [www.elsevier.com/locate/burns](http://www.elsevier.com/locate/burns)



## Burns in Sweden: An analysis of 24 538 cases during the period 1987–2004

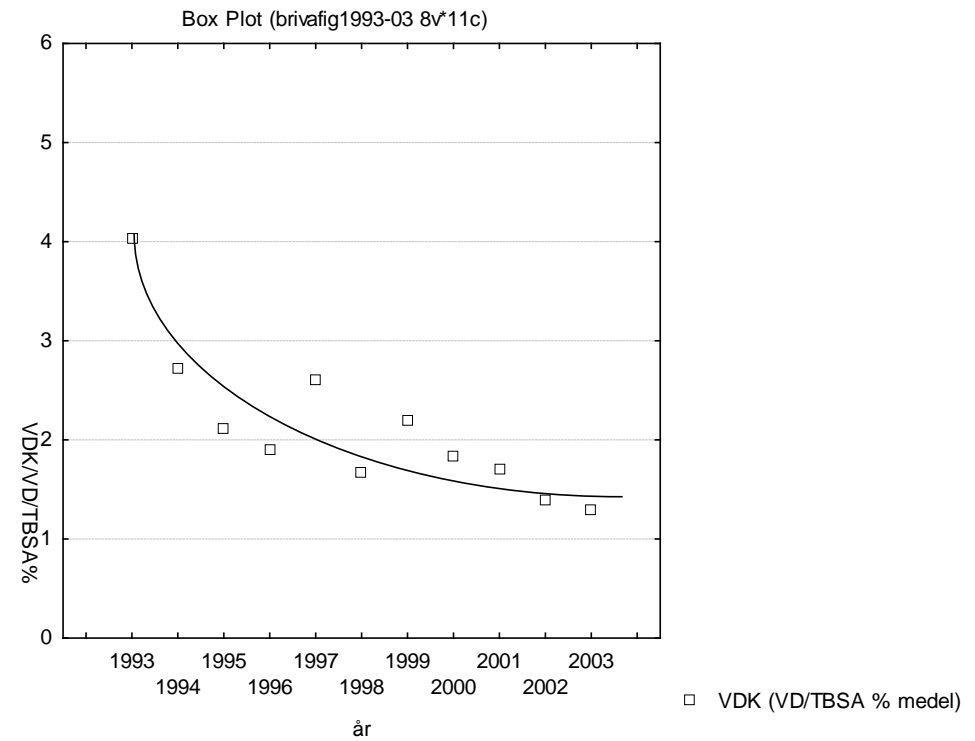
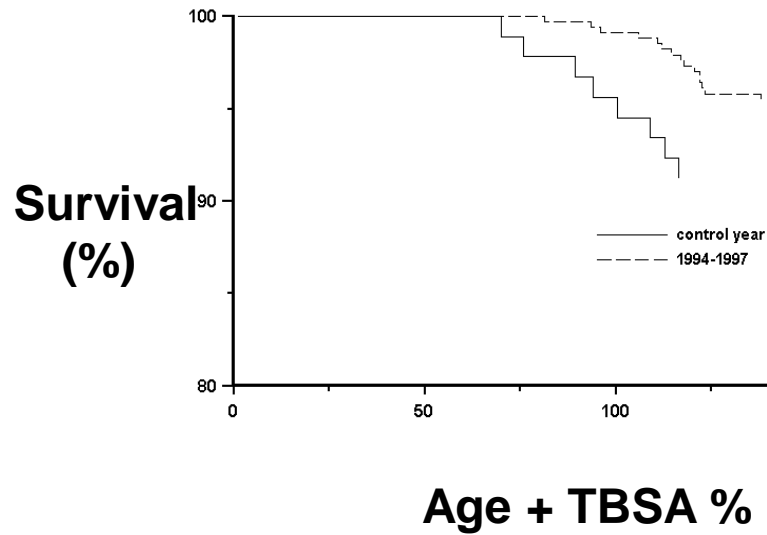
Emma Åkerlund, Fredrik R.M. Huss\*, Folke Sjöberg

Department of Plastic Surgery, Hand Surgery, and Burns, University Hospital of Linköping, Linköping, Sweden



Distribution of age and sex in burned patients admitted to hospital in 1987–2004. Black bars – men, grey bars –

# BRIVA







# 2000 Outpatient burn Care!

End of 90-ies: 20 patients in a pilot setting

95 % (19/20) - better be home  
- Very positive

---

**Goal today :** All patients

TBSA% < 10%

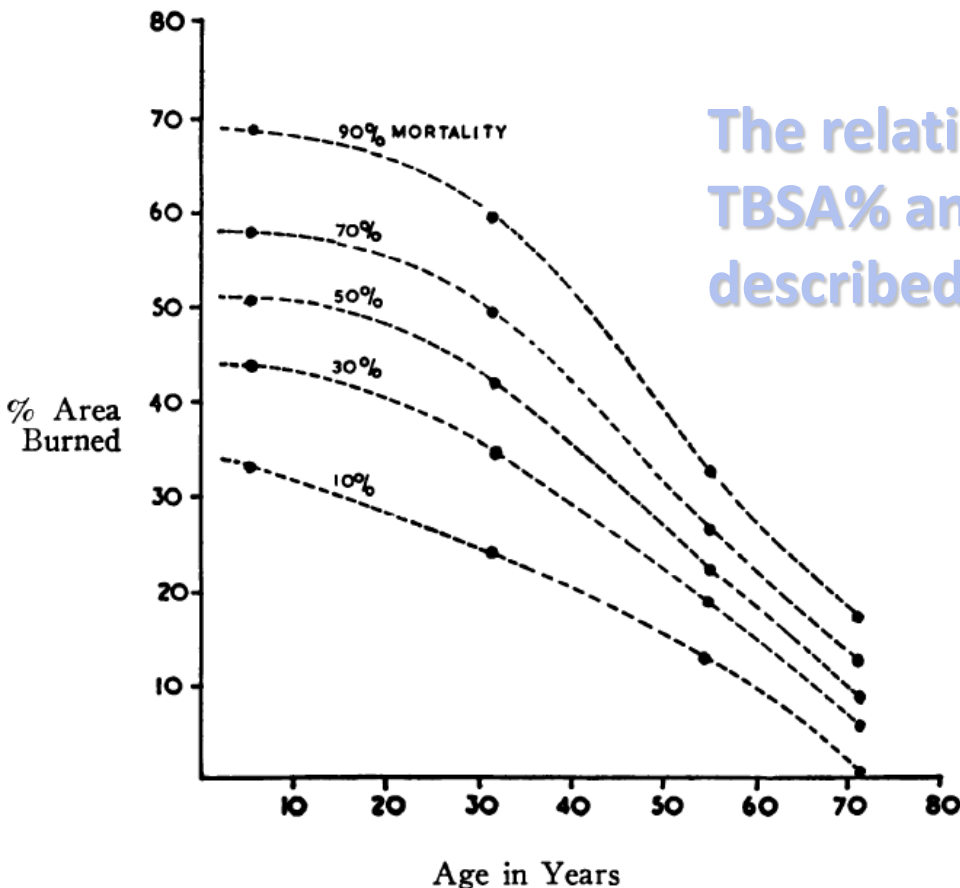
As outpatients  
after initial surgery

# “The point of futility” has changed over the last 50 years

2017-10-29

In the 1960s the Baux score was approximating to the percentage of mortality: Baux score 100 was “the point of futility”.<sup>1</sup>

$$\text{Baux score} = \text{Age} + \text{TBSA}\%$$



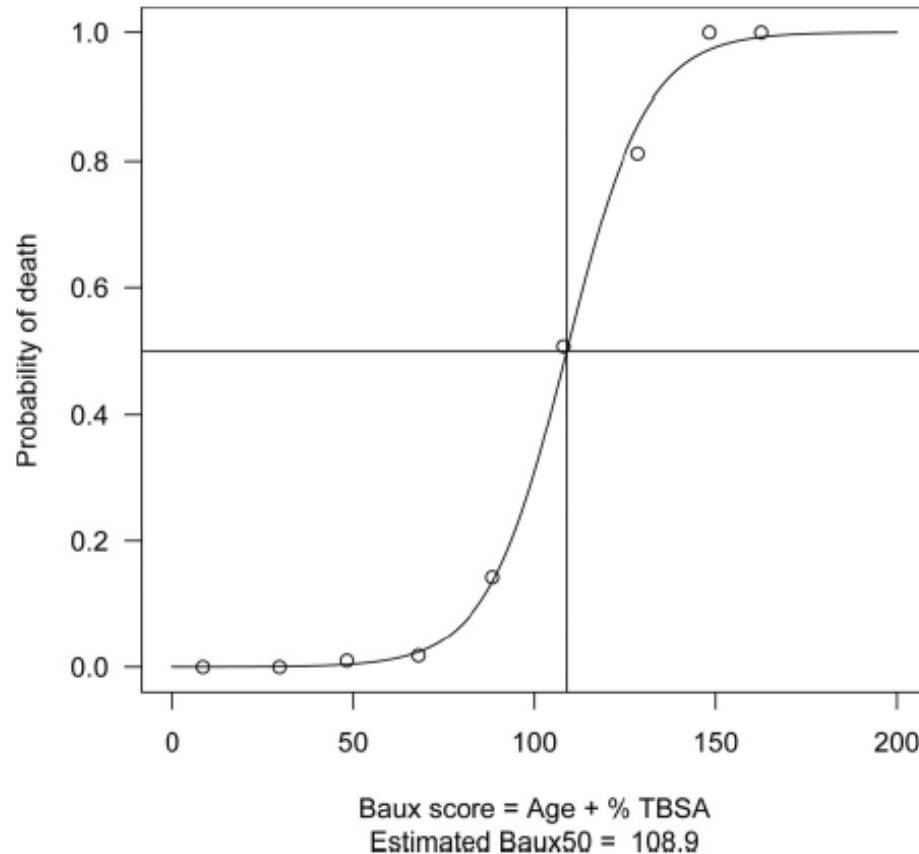
The relationship between Age, TBSA% and mortality had been described many years before.<sup>2</sup>

1. Baux S. Contribution a l'Etude du traitement local des brulures thermiques etendues. Paris: These; 1961.
2. Bull JP, Squire JR. A Study of Mortality in a Burns Unit: Standards for the Evaluation of Alternative Methods of Treatment. Ann Surg. 1949 Aug;130(2):160-73.

“The point of futility” has changed over the last 50 years

2017-10-29

In the 21st century “the point of futility” has increased to Baux score 140 or more.<sup>1,2</sup>



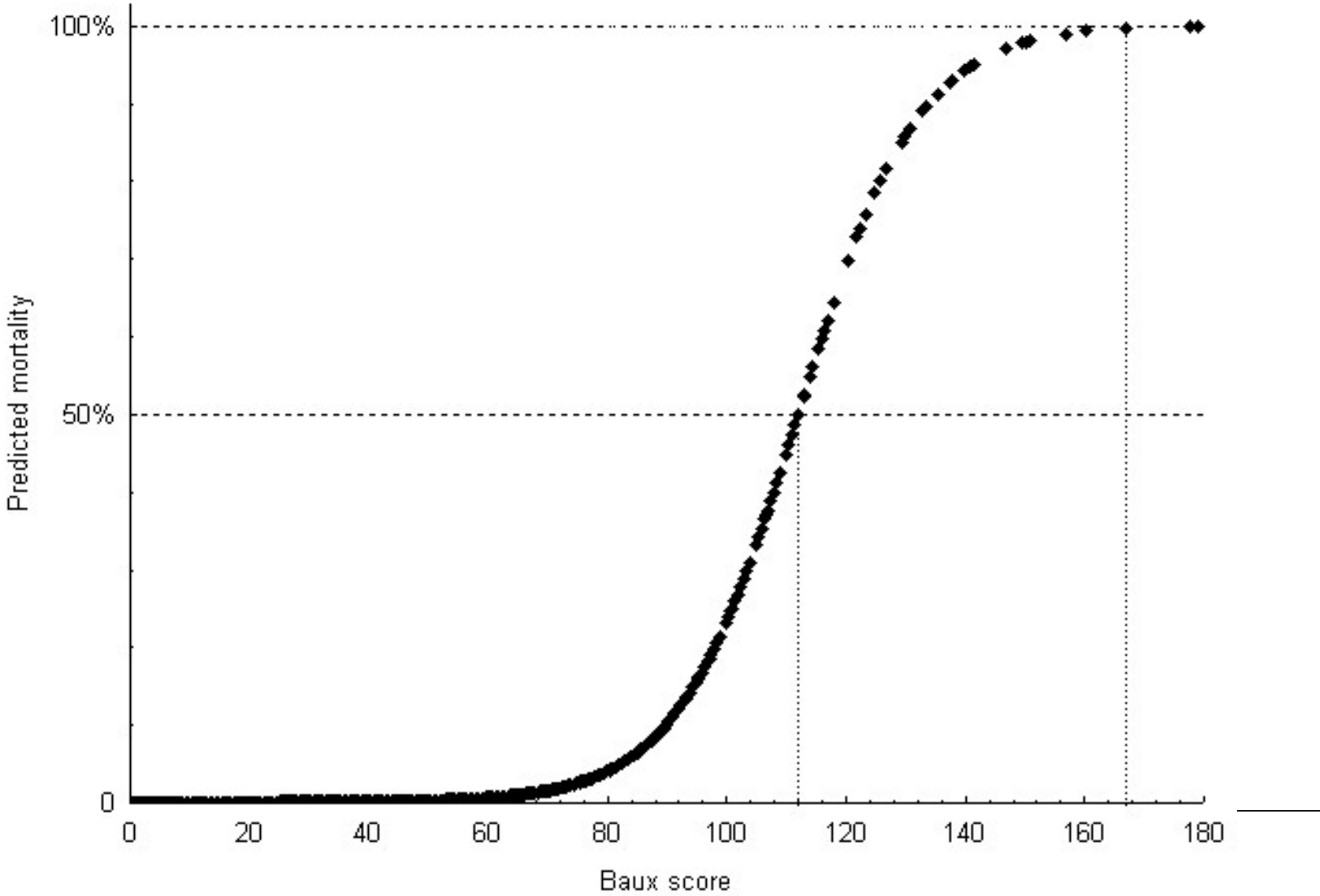
1. Osler T, et al. Simplified estimates of the probability of death after burn injuries: extending and updating the baux score. J Trauma. 2010 Mar;68(3):690-7.
2. Roberts G, et al. The Baux score is dead. Long live the Baux score: A 27-year retrospective cohort study of mortality at a regional burns service. J Trauma. 2012 Jan;72(1):251-6.

Figure 4. Data for Chelmsford, United Kingdom, June 2000 to July 2008, all ages. *Fitted line* is the estimated probability of death using logistic analysis.

# Mortality among patients admitted for burn care (n=1501)

The figure shows predicted values for mortality (logistic regression, mortality as dependent variable, Baux score as predictor)

2017-10-29



# 1990 Registries BUD Sweden

BUD Burn Unit Database - [FrmHuvudmeny : Formulär]

Arkiv Redigera Infoga Poster Fönster Hjälp

## BUD Burn Unit Database

The Linköping Burn Center  
Department of Hand and Plastic Surgery  
University Hospital in Linköping, Sweden

Slutenvård    Öppenvård    Uppföljningar    Data/Rapporter    Systeminställningar

Patientdata

BRIVAscore

BRIVAscore ändra

BUD Burn Unit Database - [The Linköping Burn Center]

Arkiv Redigera Infoga Poster Fönster Hjälp

## Välkommen till BUD

BRÄNSKADEDATABASEN I LINKÖPING (BUD)  
- ETT REDSKAP FÖR KVALITETSSÄKRING AV BRÄNSKADEVÅRDEN  
Pär Danielsson, Lotten Järnlund, Göran Nylander, Marie Odboom, Folke Sjöberg, Ingrid Steinwall, Ingvar Ström



BUD Burn Unit Database - [Patientdata]

Arkiv Redigera Infoga Poster Fönster Hjälp

The Linköping Burn Center  
University Hospital in Linköping, Sweden

### Patientdata

Jnr: 3    Vårdtillfälle: 1

Indatum: 1999-01-10    Utdatum: 1999-03-03    Vårdtygn: 19

Intid: 18.30    Uttid: 9.30

Klassificering: Ny skada

Skadedatum: 1999-01-10    Läk datum: 1999-06-05    Antal sår dagar: 146

Traumadefinition: Skade etiologi: Skållning

Olycksplats: Inomhus hemmet

Olycksorsak: Olycka fritid

TBSA %: 14.5    Brännskadeschablon

Ytlig II: 5.5

Djup II: 5

Djup III: 4

Uppföljning: 1-års kontroll: BRIVA Kommer ej Kommunikations problem

BRIVA Hemort:  Ja     Annat sjukhus

BRIVA, Träning Hemort:  Träning Hemort

Avliden:

Avl\_dat:

Post:  av 1

BUD Burn Unit Database - [FrmBrännskadeschablon : Formulär]

Arkiv Redigera Infoga Poster Fönster Hjälp

### Lund och Browder- Brännskadeschablon

Patientens ålder: 65

Skadedatum: 1999-01-10

REGION	ÅLDSGRUPPER					Ytlig II %	Djup II %	Djup III %	TOTAL%
	0-1	1-4	5-9	10-15	16-65				
Huvud	19	17	13	10	7	1	0	0	1
Nacke	2	2	2	2	2	0	0	0	0
Bål framsida	13	13	13	13	13	3	3	4	10
Bål baksida	13	13	13	13	13	0	0	0	0
Hö glutee	2,5	2,5	2,5	2,5	2,5	0	0	0	0
Vä glutee	2,5	2,5	2,5	2,5	2,5	0	0	0	0
Genitalia	1	1	1	1	1	0	0	0	0
Hö överarm	4	4	4	4	4	0	2	0	2
Vä överarm	4	4	4	4	4	0	0	0	0
Hö underarm	3	3	3	3	3	0	0	0	0
Vä underarm	3	3	3	3	3	0	0	0	0
Hö hand	2,5	2,5	2,5	2,5	2,5	1,5	0	0	1,5
Vä hand	2,5	2,5	2,5	2,5	2,5	0	0	0	0

Personnr: 19340101-0090

Förnamn: Karl

Efternamn: Skog

In datum: 1999-01-10

# American Burn Association National Burn Repository Benchmark Report

Released 2013  
Capturing Data Admitted Between  
January of 2009 and June of 2011

CONFIDENTIAL








## Hospital Burn Information

Director -- Folke Sjöberg  
Linköping University Hospital

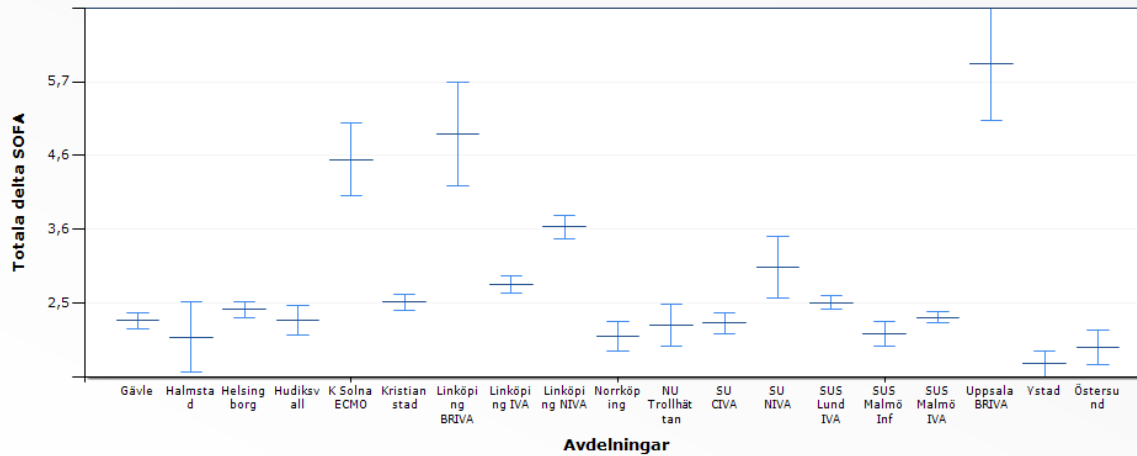


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<h1>42%</h1>  <p>NBR=42%</p> <p><b>Fire</b></p> <p>injuries represent 42% of cases from your hospital between 2009-2011 that were used in this benchmark report</p>	<h1>34%</h1>  <p>NBR=36%</p> <p><b>Scald</b></p> <p>injuries represent 34% of cases from your hospital between 2009-2011 that were used in this benchmark report</p>	<h1>8%</h1>  <p>NBR=9%</p> <p><b>Contact</b></p> <p>injuries represent 8% of cases from your hospital between 2009-2011 that were used in this benchmark report</p>	<h1>5%</h1>  <p>NBR=3%</p> <p><b>Chemical</b></p> <p>injuries represent 5% of cases from your hospital between 2009-2011 that were used in this benchmark report</p>	<h1>5%</h1>  <p>NBR=3%</p> <p><b>Electrical</b></p> <p>injuries represent 5% of cases from your hospital between 2009-2011 that were used in this benchmark report</p>
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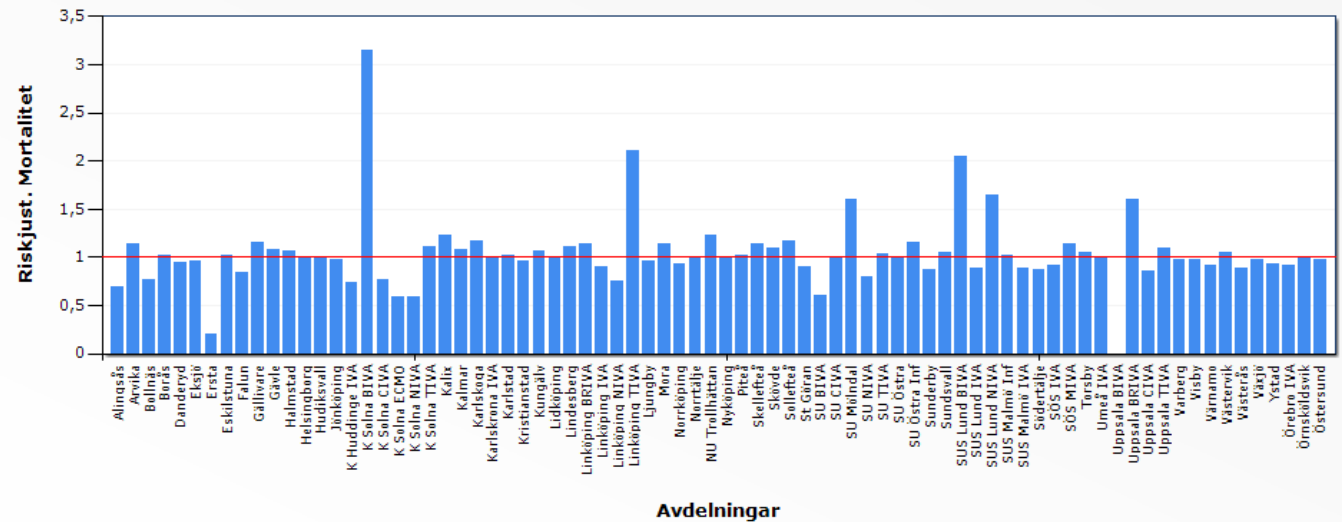
Totala delta SOFA medel, inskrivningsperiod 2010-01-01 - 2017-12-31



Detta är en modifierad rapport

Svenska Intensivvårdsregistret 2017-10-10

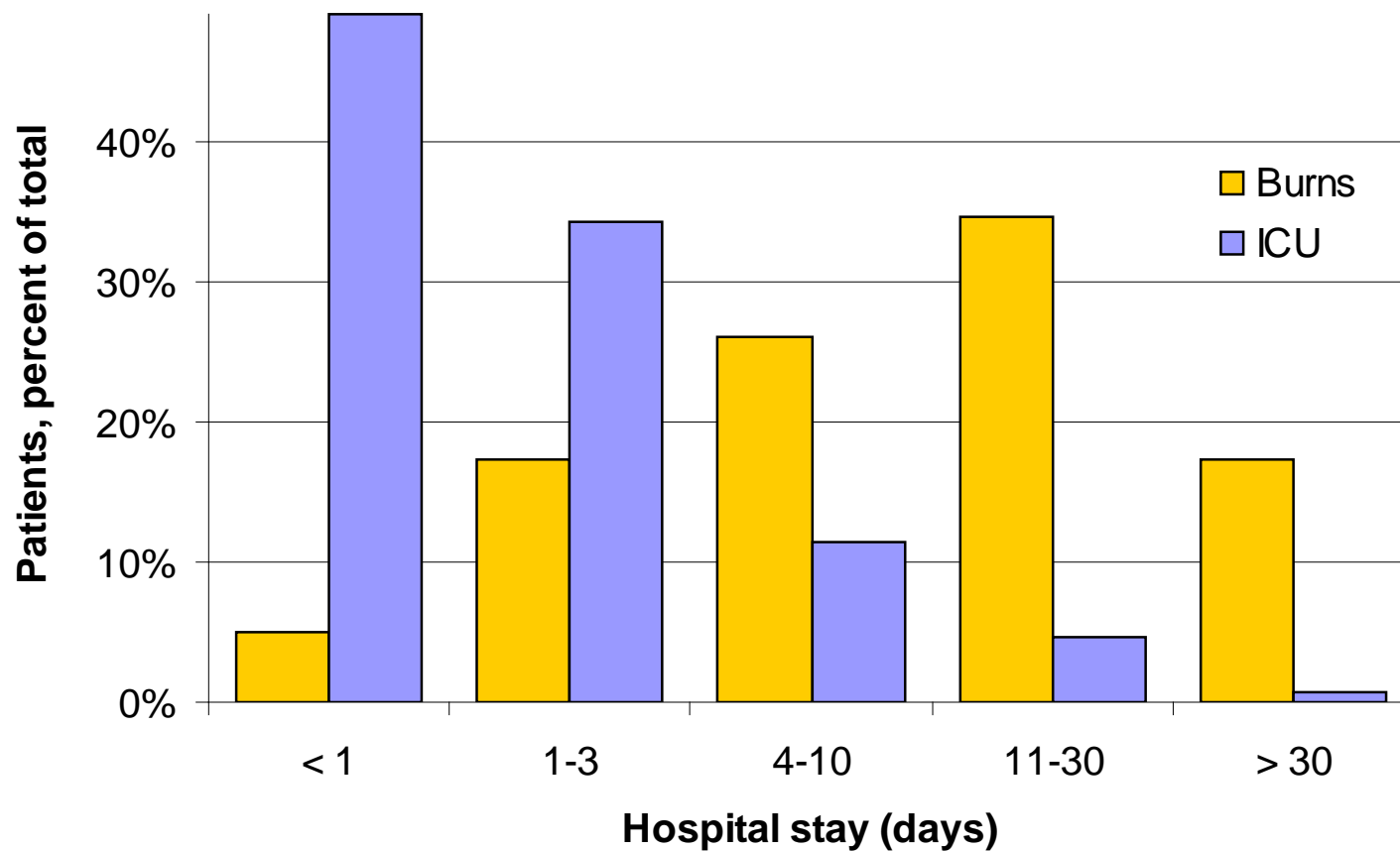
SMR baserad på SAPS3 30 dagars mortalitet, 2010-01-01 - 2017-12-31



Detta är en modifierad rapport

Svenska Intensivvårdsregistret 2017-10-10

## Patients (percent of total) in each interval of hospital stay







available at [www.sciencedirect.com](http://www.sciencedirect.com)



journal homepage: [www.elsevier.com/locate/burns](http://www.elsevier.com/locate/burns)



## Burns in Sweden: An analysis of 24 538 cases during the period 1987–2004

Emma Åkerlund, Fredrik R.M. Huss\*, Folke Sjöberg

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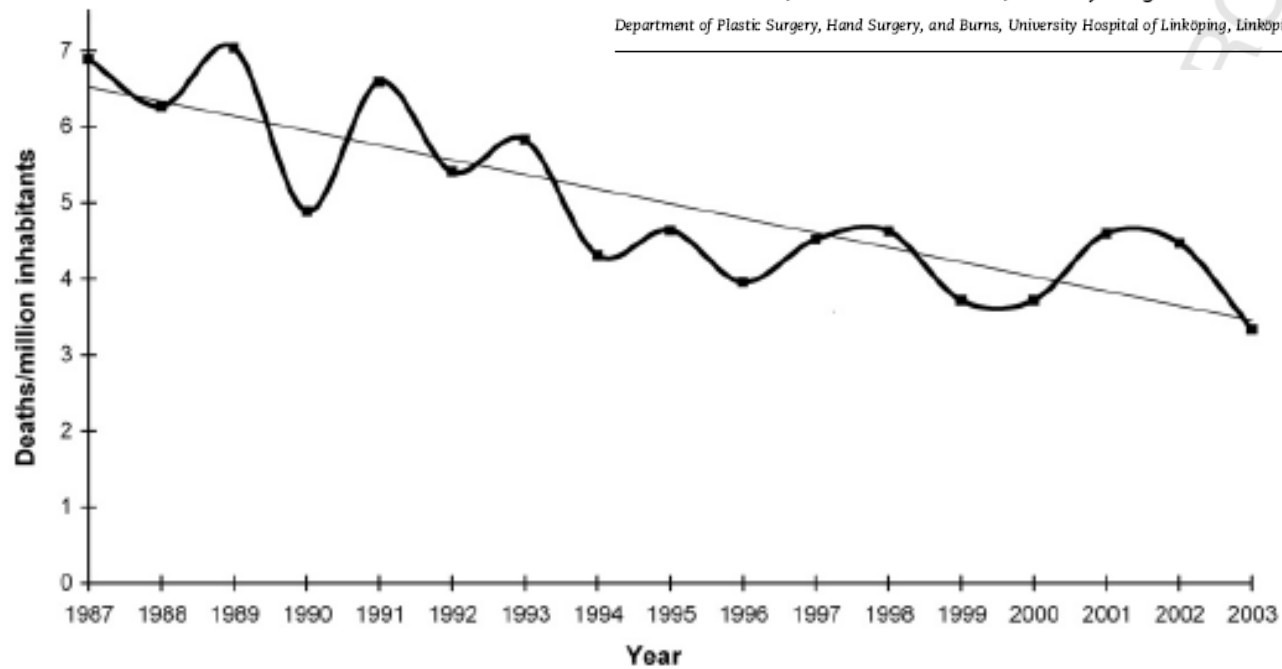


Fig. 2 - Mortality at hospitals due to burn injury/million inhabitants/year.

# RIKSSJUKVÅRD AV SVÅRA BRÄNNSKADOR

Kontaktvägar (nationell larmplan)



## Centralized care

RIKSSJUKVÅRD AV BRÄNNSKADOR  
- Larmplan och nationell samordning

Rikssjukvård av brännskador		Dokumenttyp: Nationell riktlinje
Riksuppdrag gemensamt	Sökord: Rikssjukvård, svåra brännskador, kontaktvägar, Nationell larmplan	Giltig fr o m: 2013-11-15 Reviderad: 2016-01-01 2016-07-01 2017-01-24
Utfärdande enhet: Brännskadecentrum Akademiska sjukhuset, Region Uppsala och Brännskadecentrum Universitetssjukhuset Region Östergötland	Målgrupp: Sjukvårdshuvudmän	Giltigt t o m: 2019-07-01
bearbetad av: Annika Bergström beredskapssamordnare Region Östergötland Stefan Lindh beredskapssamordnare Region Uppsala m.fl.	Godkänd av: Fia Olofsson MD PhD, specialist i plastikkirurgi och allmän kirurgi Region Östergötland Fredrik Huss MD PhD överläkare Region Uppsala Anita Mohall beredskapsöverläkare Region Östergötland	Diarienummer RS 2016-108



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Socialstyrelsen  
106 30 Stockholm  
Krisberedskap

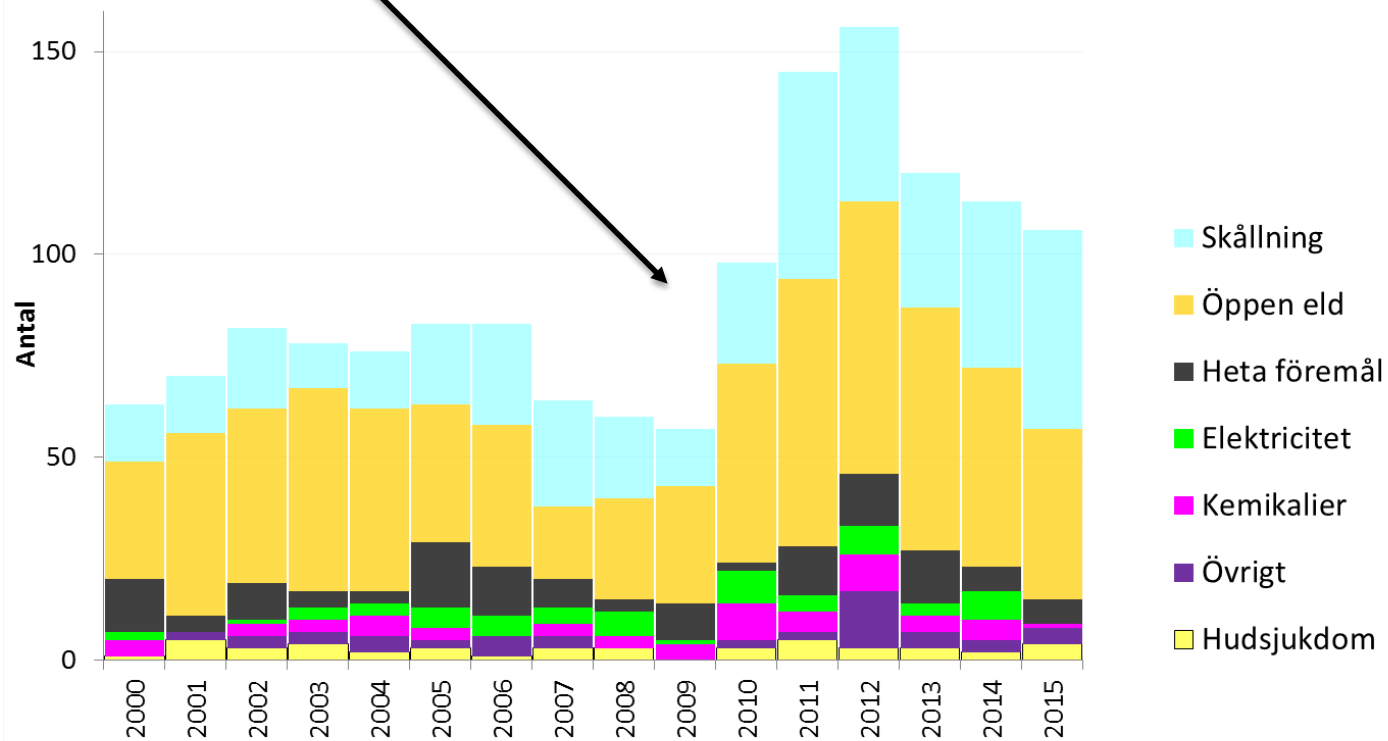
Tel 075-247 30 00  
socialstyrelsen@socialstyrelsen.se





2010

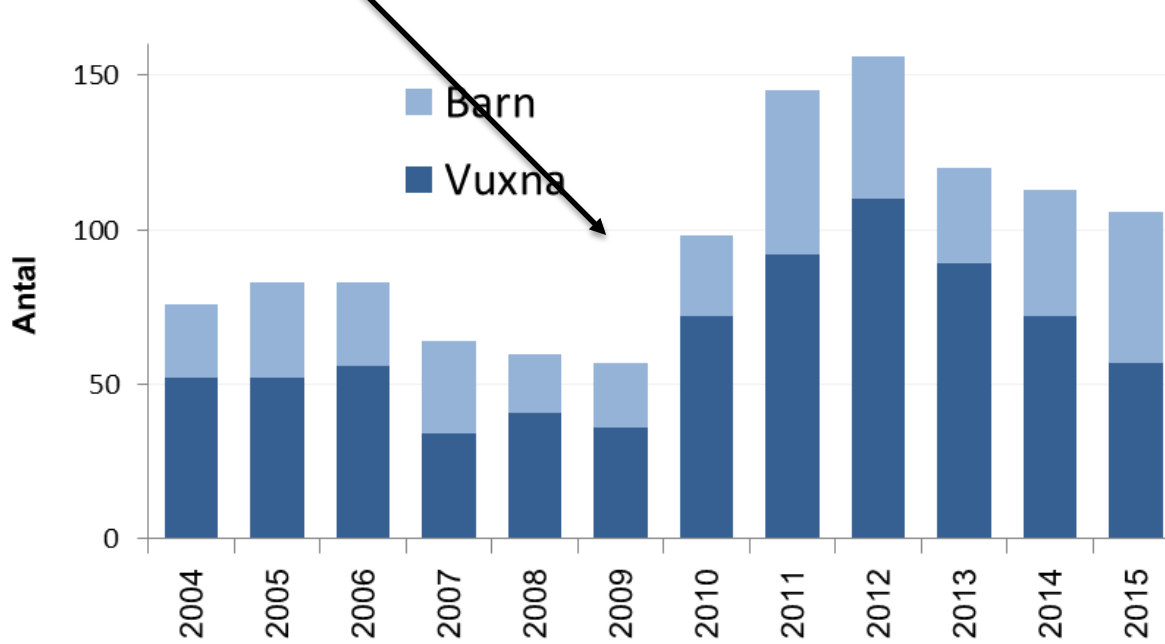
# Cause of injury

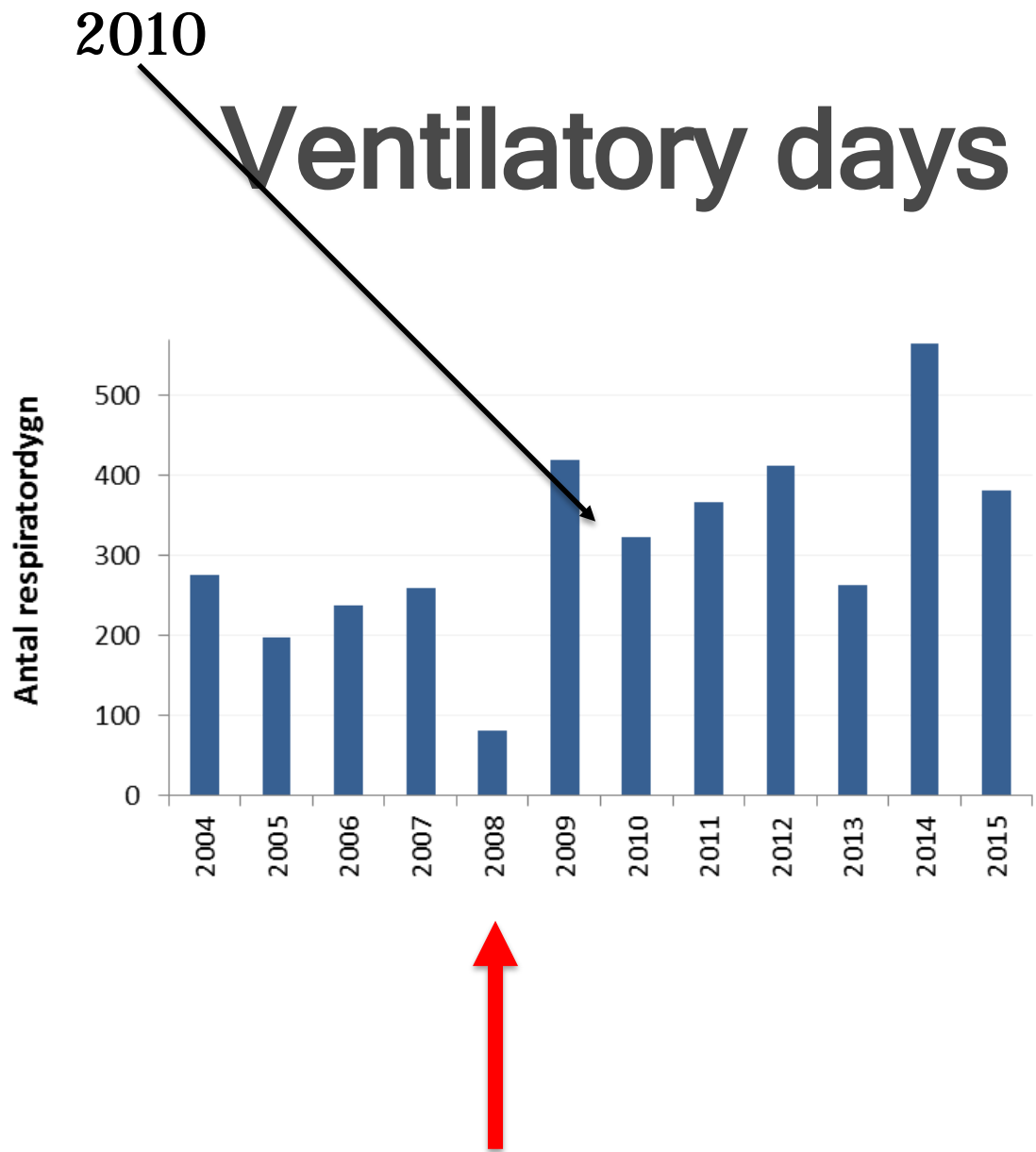




2010

# Inpatients

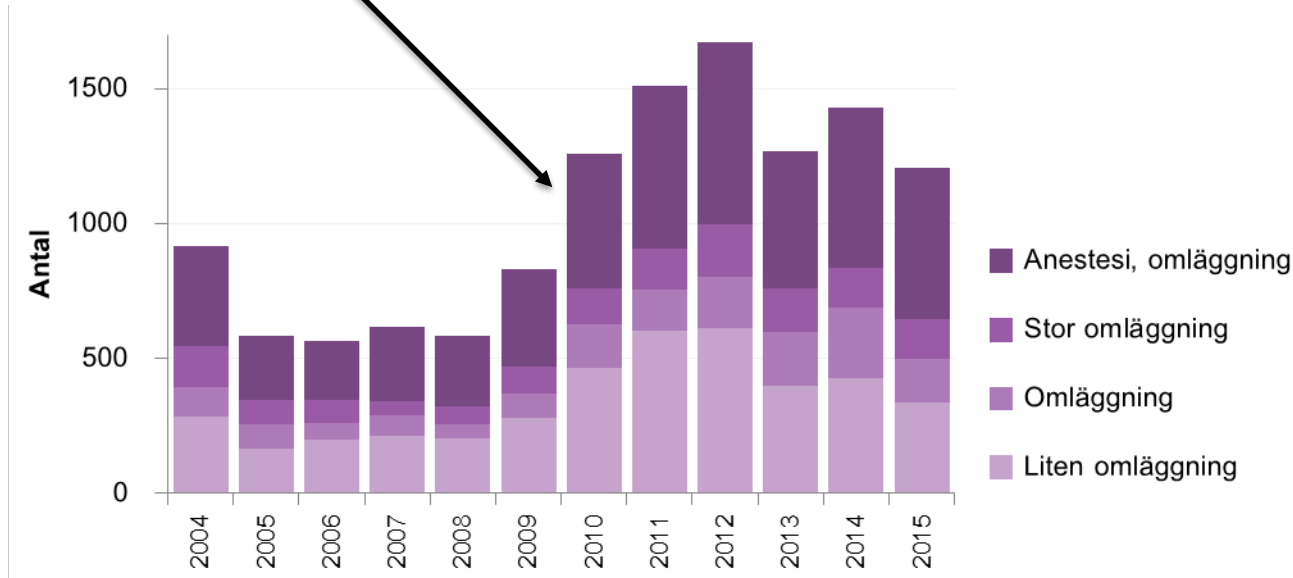






2010

# Wound care and dressing changes





JUST NU

**EN KAMP FÖR LIVET**



JUST NU

**EN KAMP FÖR LIVET**

4



4



JUST NU

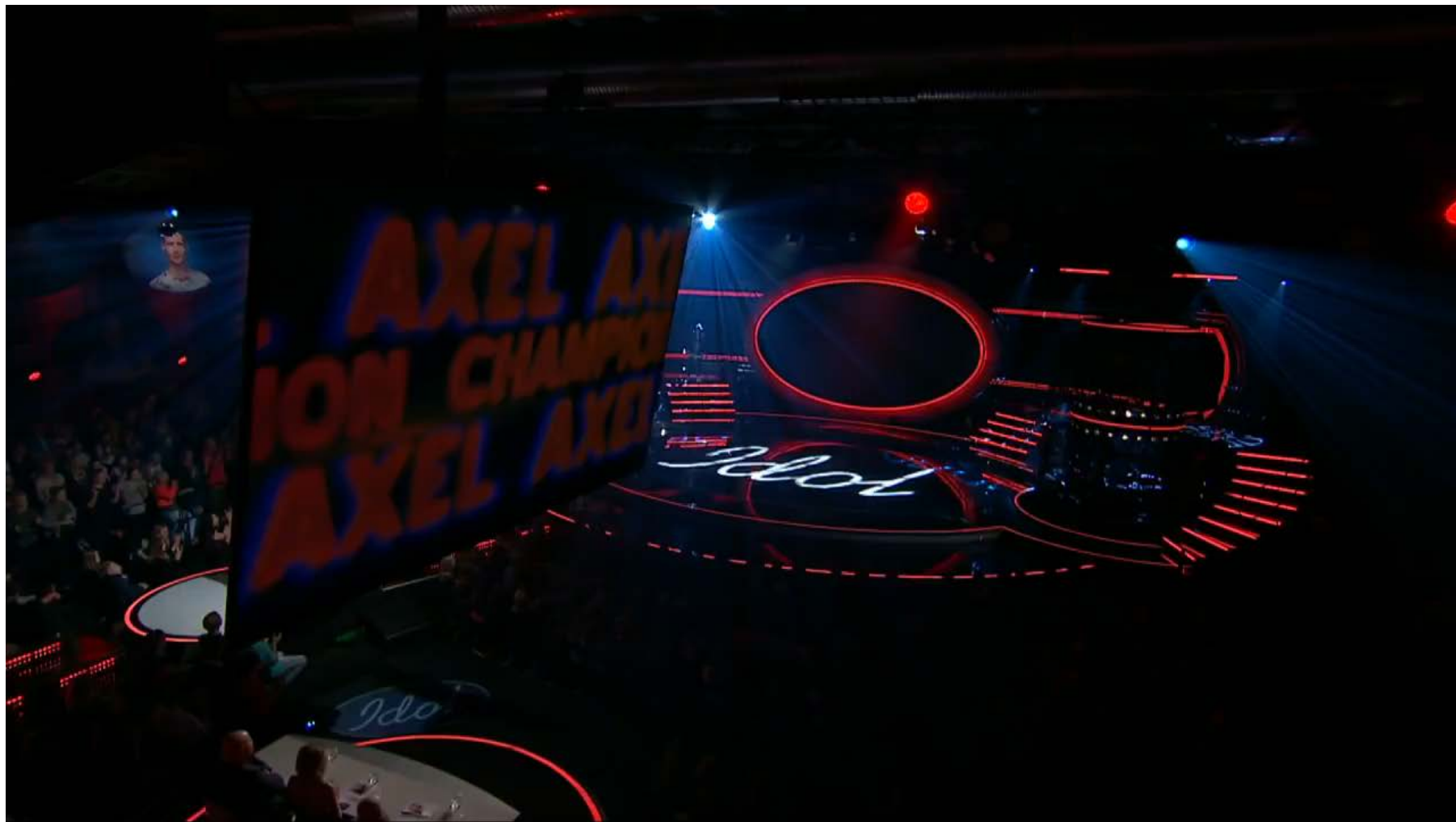
**EN KAMP FÖR LIVET**



JUST NU

**EN KAMP FÖR LIVET**

4







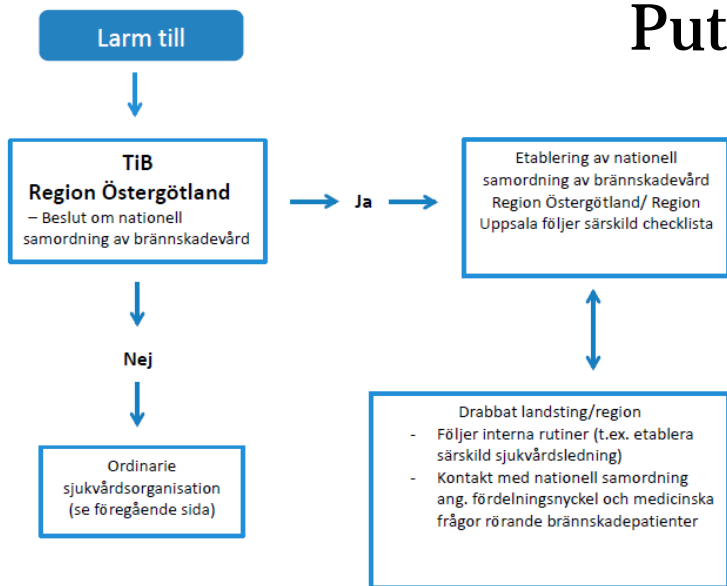
2017-10-29

# Swedish national disaster plan

RIKSSJUKVÅRD AV BRÄNNSKADOR  
- Larmplan och nationell samordning

Nationell larmplan vid 3 eller fler svårt brännskadade i behov av specialistvård (se kriterier för rikssjukvårdsfall)

## Put in action when > 3 major burns



# Thank you!

[www.liu.se](http://www.liu.se)

