Hôpitaux de Toulouse

Hôpital des Enfants

Enfants brûlés

Epidémiologie

Quand évoquer une maltraitance?

9è Journées D'Urgences Pédiatriques

Dr Guillaume Lopin

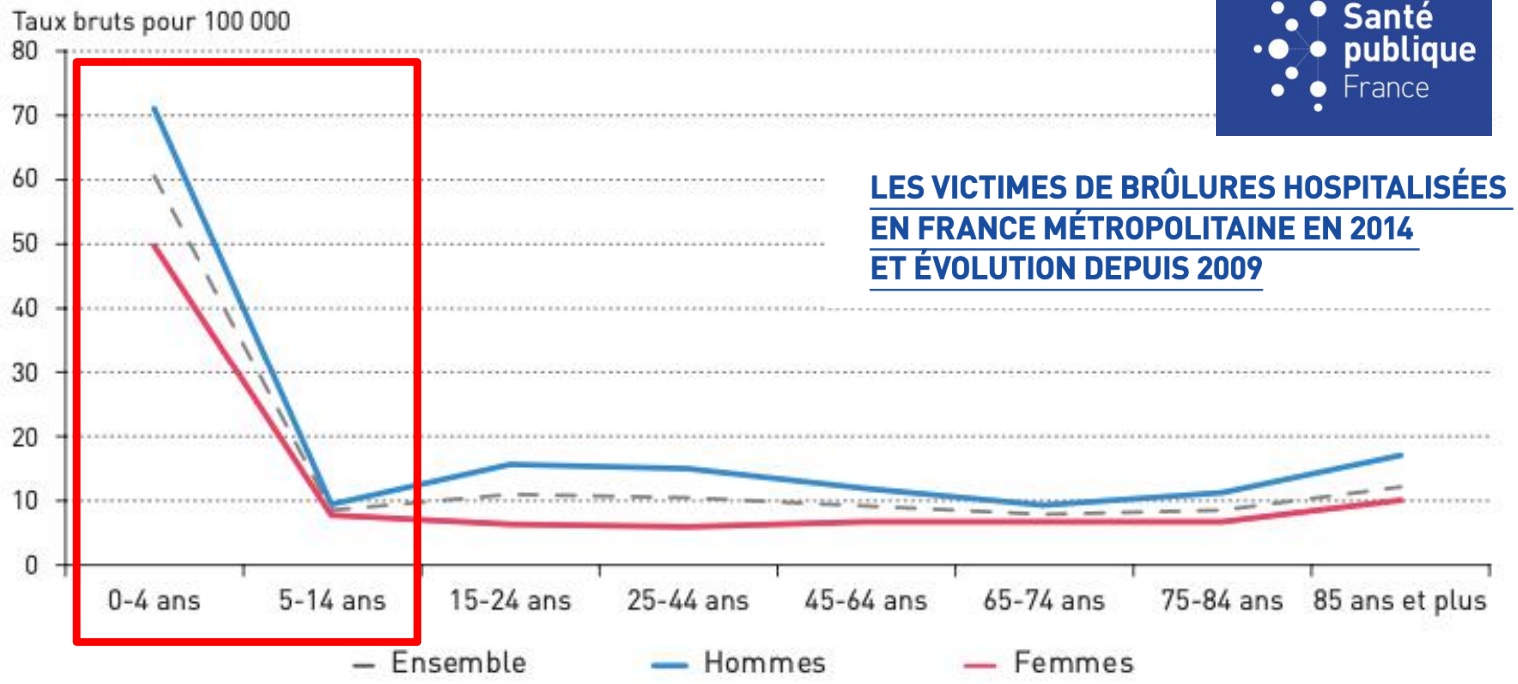
Urgences pédiatriques Toulouse

8 octobre 2021

Pas de conflit d’intérêt

Epidémiologie

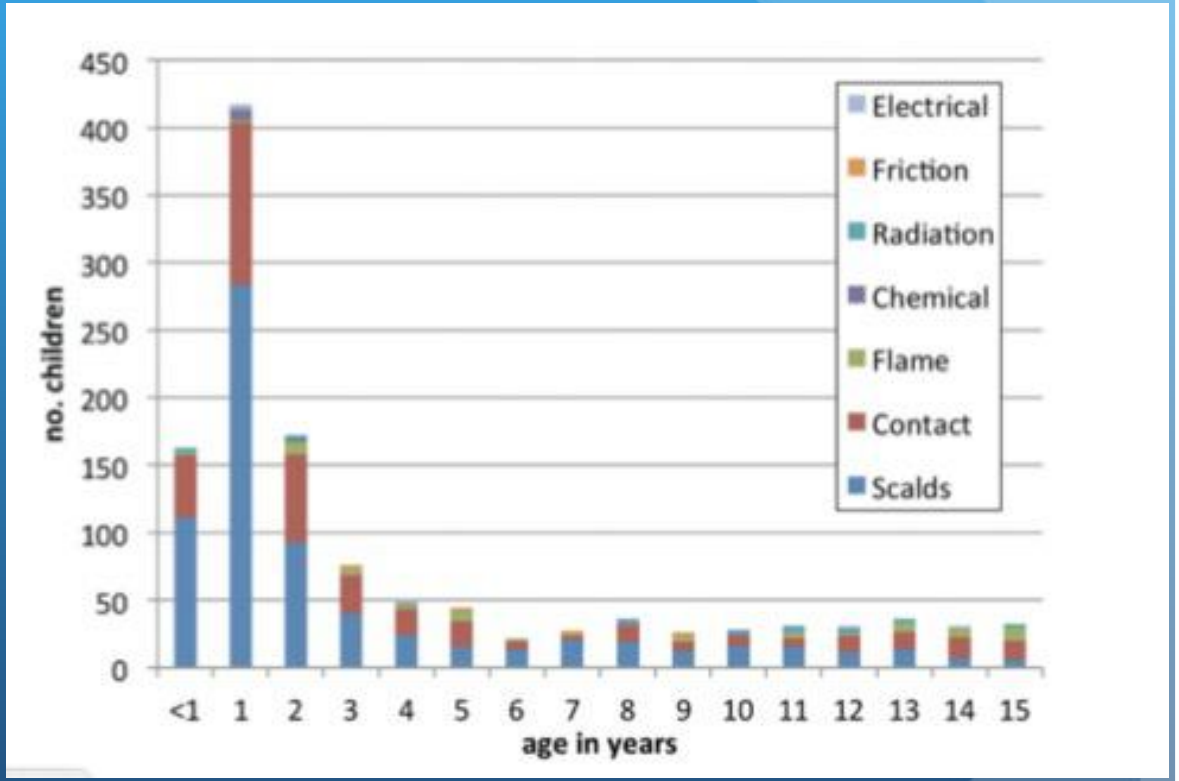
FIGURE 1 | **Taux d'incidence bruts (pour 100 000 habitants) des victimes de brûlures hospitalisées et résidant en France métropolitaine par classe d'âge selon le sexe, PMSI-MCO, 2014**



- 0-5 ans = 28,8% des patients hospitalisés (2014), soit 2440 enfants
- Taux d'incidence < 5 ans = 6x plus élevée >5 ans
  (61/100.000 hab vs 10/100.000 hab)
- H > F

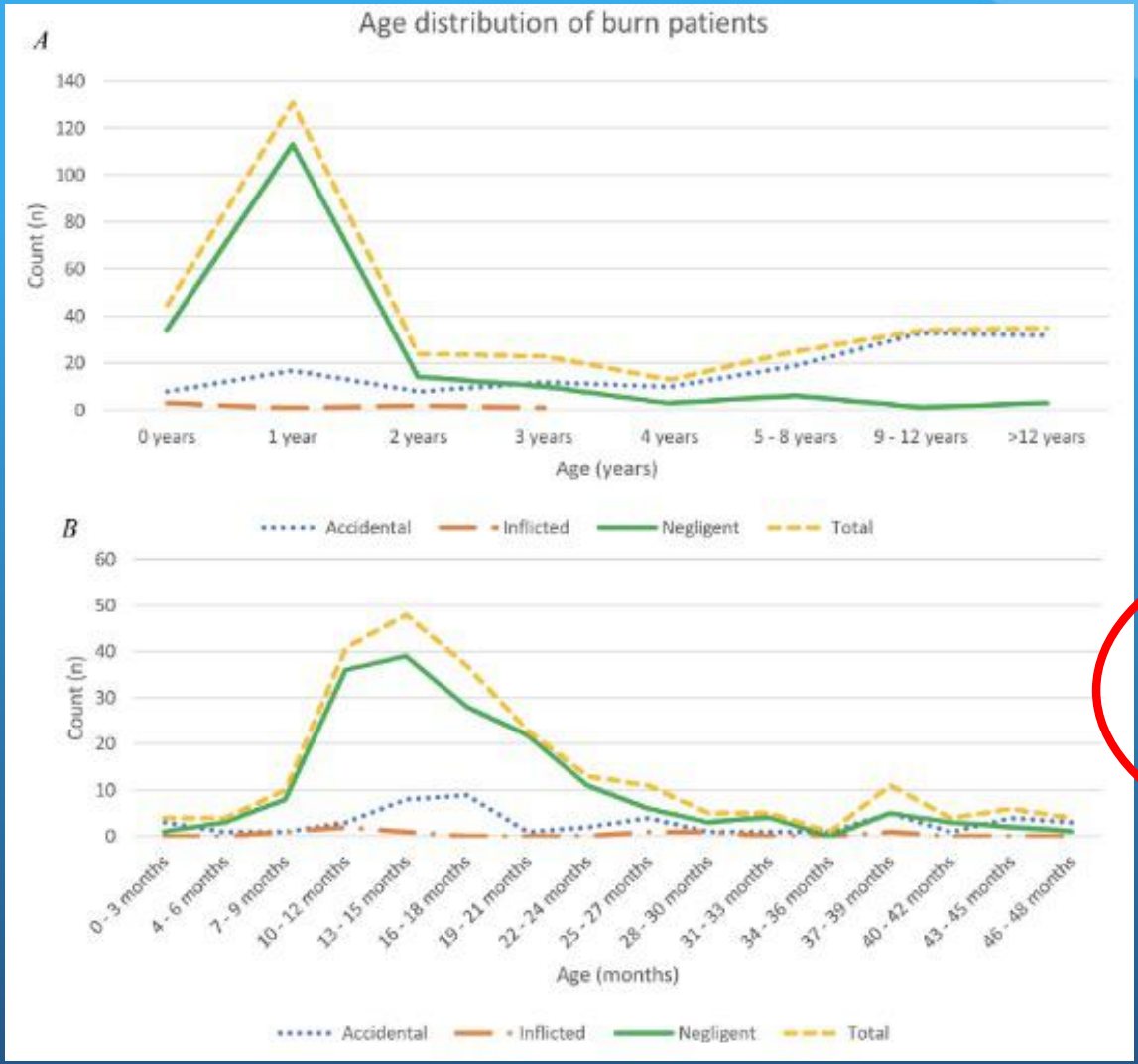
- **72% admissions aux urgences péd pour brûlure <5 ans**
- Taux hospitalisation 17,6%

- **Risque débute vers 9 mois**
  - Début indépendance déplacements
  - Exploration environnement
  - Inconscience du danger
  - Parents peu préparés
- **Pic à 1 an**
  - **10x plus / âge >5 ans**
  - Taille 74-76cm
  - Table 75cm, plan travail 90cm
- **Diminution incidence à 3 ans**
  - Conscience du danger
  - Plus de temps passé dehors
  - Parents plus vigilants



Patterns of burns and scalds in children

A M Kemp, S Jones, Z Lawson, S A Maguire



Child abuse and neglect in paediatric burns: The majority is caused by neglect and thus preventable

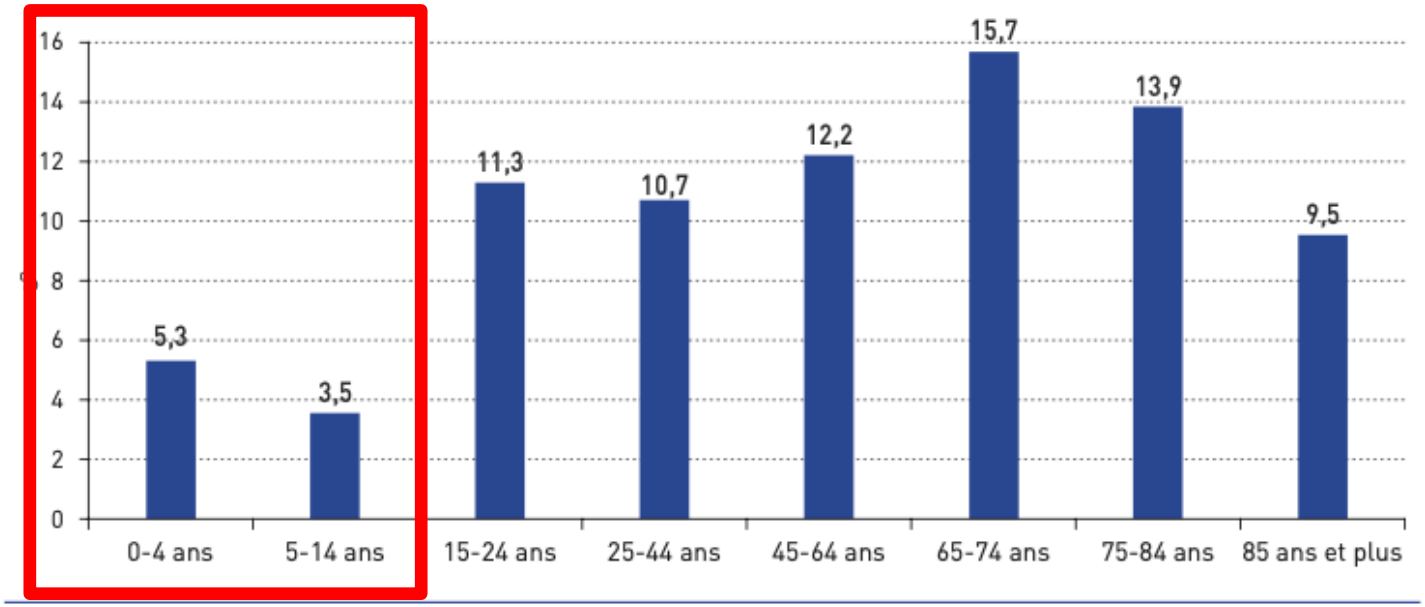
Marie-Louise H.J. Loos [a,], Annebeth Meij-de Vries [a,b], Michelle Nagtegaal [c,d], Roel Bakx [a], in collaboration with the KARIBU-group [1]*

CTB Amsterdam, 330 enfants

- 2% de brûlures intentionnelles
- 42% accidentelles
- 56% négligence
  - Manque de surveillance
  - Environnement non sécurisé
  - 86% chez les 0-2 ans

Evitable par la prévention!

FIGURE 4 | **Part des victimes de brûlures graves hospitalisées en CTB et résidant en France métropolitaine selon l'âge, PMSI-MCO, 2014**

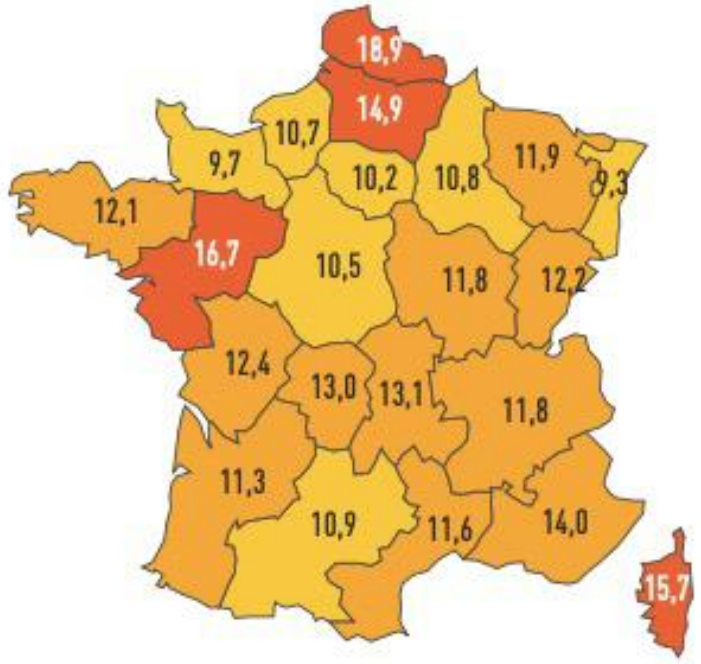


Santé publique France

LES VICTIMES DE BRÛLURES HOSPITALISÉES EN FRANCE MÉTROPOLITAINE EN 2014 ET ÉVOLUTION DEPUIS 2009

Versus 11,9% > 15 ans

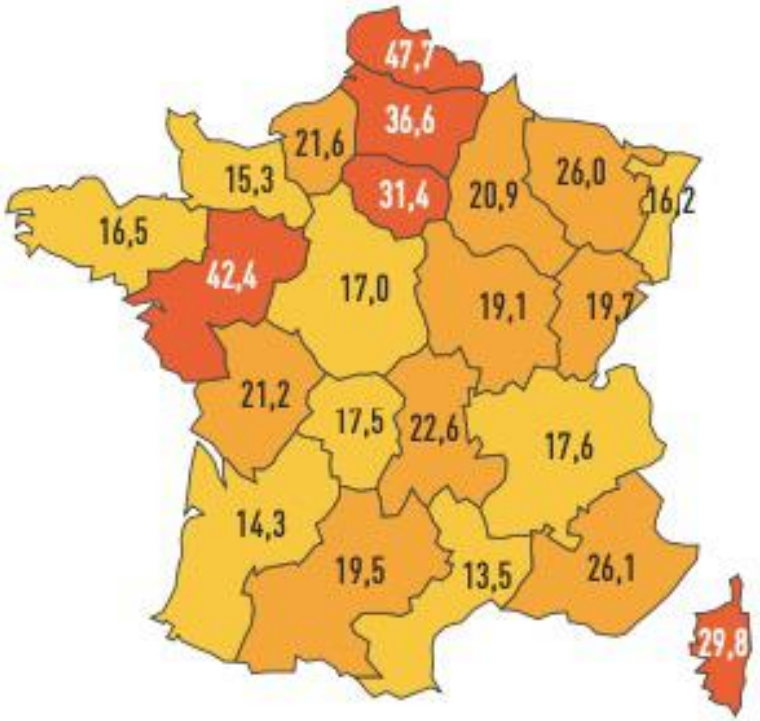
CARTE 1 | **Taux standardisés régionaux (pour 100 000 habitants) des victimes de brûlures hospitalisées et résidant en France métropolitaine, PMSI-MCO, 2014**



Taux d'incidence pour 100 000

[9,3 ; 11,3[[11,3 ; 14,0[[14,0 ; 18,9]

Moins de 15 ans



Taux d'incidence pour 100 000 habitants

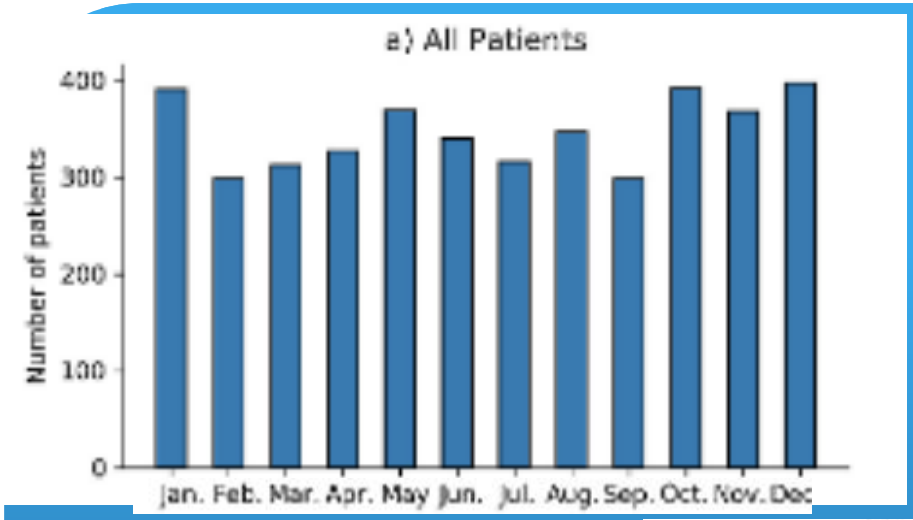
[13,5 ; 19,1[

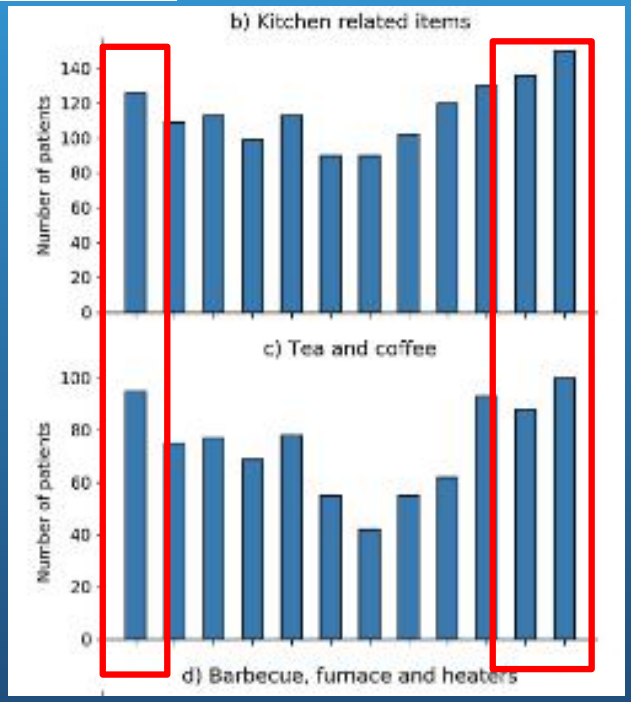
[19,1 ; 29,8[

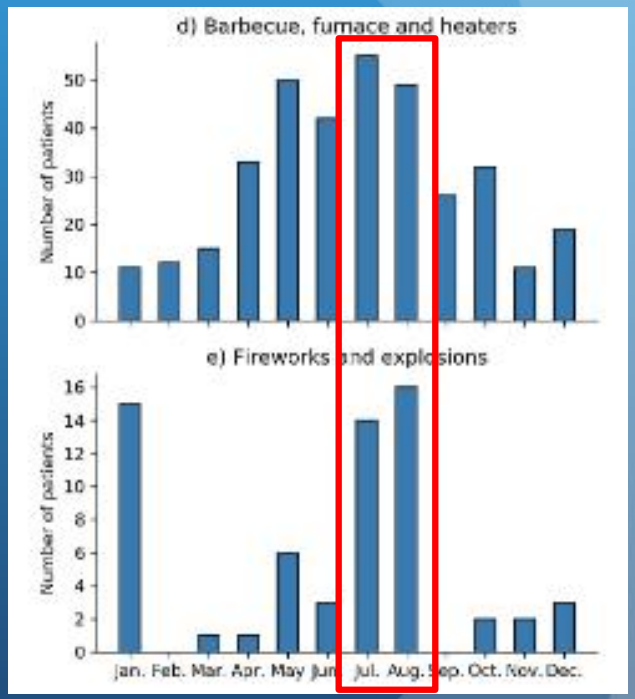
[29,8 ; 47,7]

Santé publique France

LES VICTIMES DE BRÛLURES HOSPITALISÉES EN FRANCE MÉTROPOLITAINE EN 2014 ET ÉVOLUTION DEPUIS 2009



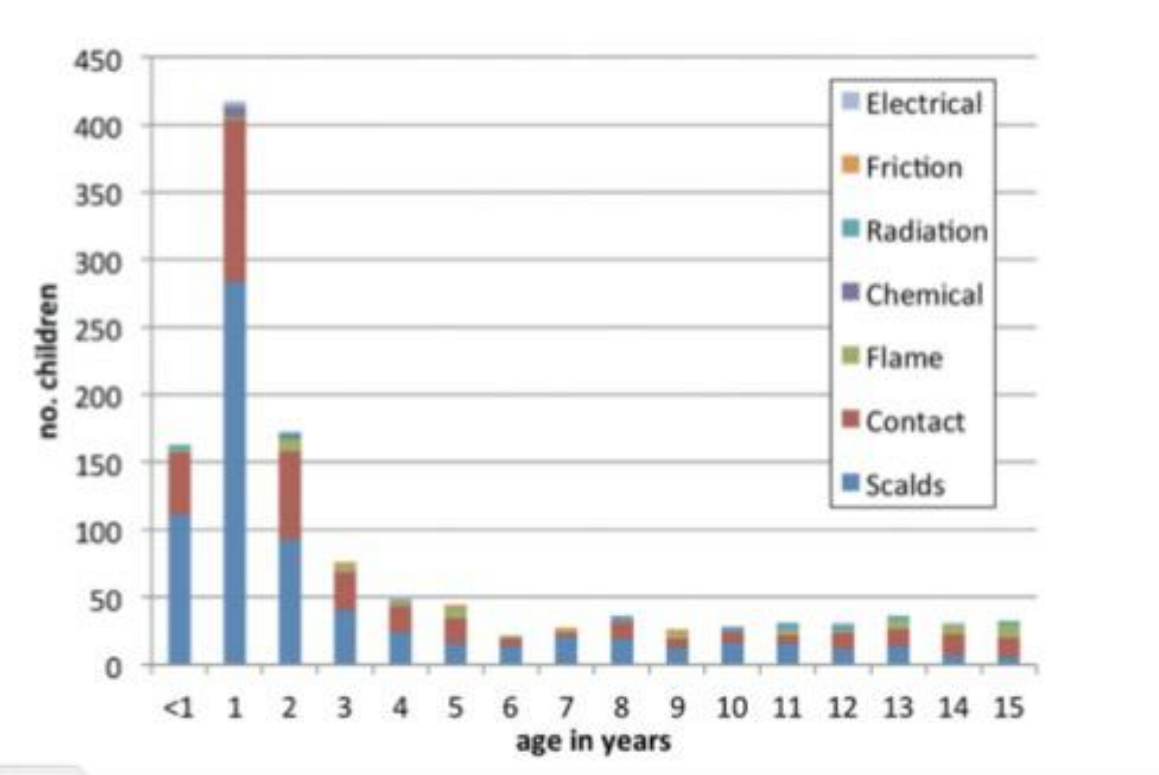




Incidence, severity and pattern of burns in children and adolescents: An epidemiological study among immigrant and Swiss patients in Switzerland

Julia Elrod [a,*], *Clemens M. Schiestl* [a], *Christoph Mohr* [a], *Markus A. Landolt* [b,c]

- **Agent causal**
  - Liquides chauds 58%
  - Solides chauds 32%
  - Autre 10%



Patterns of burns and scalds in children

A M Kemp, S Jones, Z Lawson, S A Maguire

- Agent causal et mécanisme différents -5A / +5A

- Agent causal
  - **Liquides chauds 58%**
  - Solides chauds 32%
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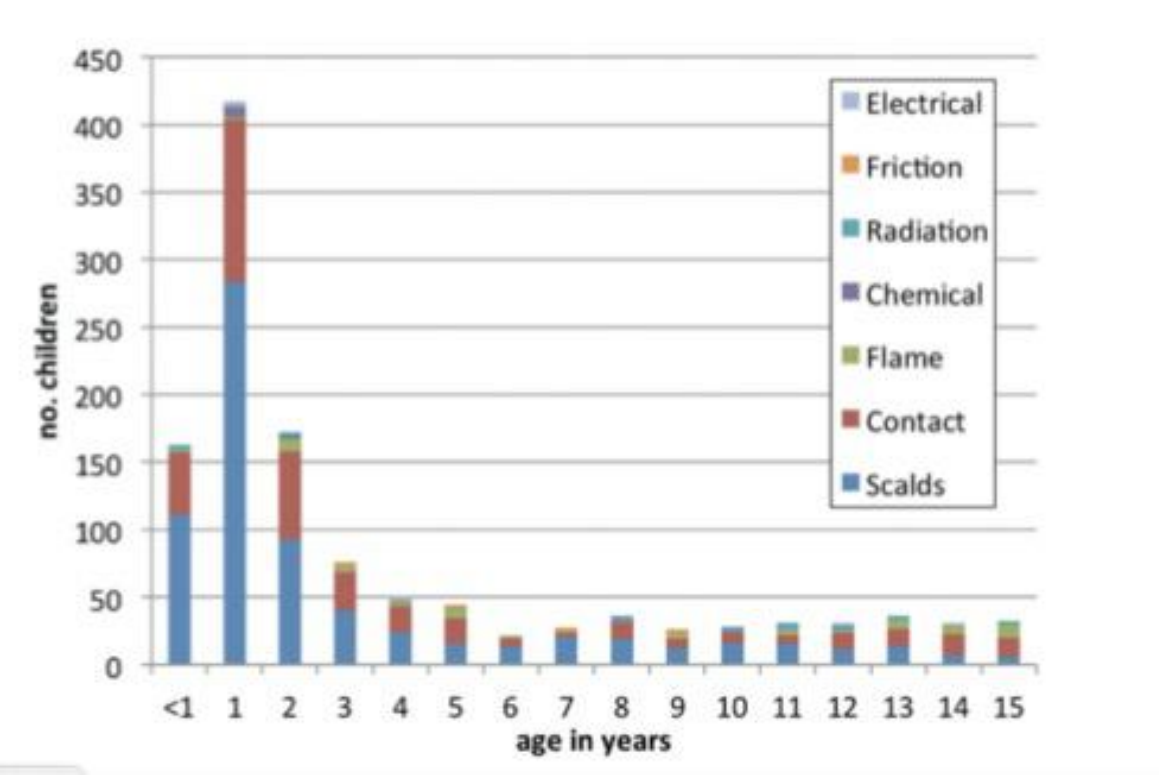

Patterns of burns and scalds in children

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- Agent causal et mécanisme différents -5A / +5A

Table 1 Scald agent and mechanism by age (n=709): number of children with scalds from different categories of agent and proportion of each mechanism involved

	Hot beverages* (352)	Domestic water* (267)	Food item* (90)
Mechanism in those aged <5 years Total number of children (554)	305 55% (95% CI 50.5% to 59.1%)	189 34.1% (95% CI 30.3% to 38.2%)	60 10.8% (95% CI 8.5% to 13.7%)
Pull-down 266 (48%)	186 61% (95% CI 55.5% to 66.5%)	62 32.8% (95% CI 26.1% to 39.5%)	18 30% (95% CI 18.4% to 41.6%)
Spill 178 (32.1%)	93 31% (95% CI 25.8% to 36.2%)	56 29.6% (95% CI 23% to 36.1%)	29 48% (95% CI 35.4% to 60.6%)
Fall/running 10 (1.8%)	7 2.3% (95% CI 0.6% to 4%)	1 0.5% (95% CI −0.5% to 1.5%)	2 3.3% (95% CI −1.2% to 7.8%)
Immersion/touch 34 (6.1%)	7 2.3% (95% CI 0.6% to 4%)	22 11.6% (95% CI 7% to 16.2%)	5 8.3% (95% CI 1.3% to 15.3%)
Third party (trip or spill) 30: (5.4%)	12 4% (95% CI 1.8% to 6.2%)	15 7.9% (95% CI 4% to 11.8%)	3 3.8% (95% CI −1% to 8.6%)
Climb into 15 (2.7%)	–	15 7.9% (95% CI 4% to 11.8%)	–
Flowing water 12 (2.2%)	–	12 6.3% (95% CI 2.8% to 9.8%)	–
Splash/explosion 9 (1.6%)	–	6 3.2% (95% CI 0.7% to 5.7%)	3 3.8% (95% CI −1% to 8.6%)
Mechanism in those aged >5 years Total number of children (155)	47 30.3% (95% CI 23.6% to 30.8%)	78 50.3% (95% CI 42.5% to 58.1%)	30 19.4% (95% CI 13.9% to 26.3%)
Pull-down 17 (11%)	5 10.6% (95% CI 1.8% to 19.4%)	8 10.3% (95% CI 3.6% to 17%)	4 13.3% (95% CI 9.5% to 17.1%)
Spill 118 (76.1%)	38 81% (95% CI 69.8% to 92.2%)	57 73% (95% CI 63.2% to 82.9%)	23 76.6% (95% CI 71.9% to 81.4%)
Fall/running 6 (3.9%)	1	3 3.8% (95% CI −0.4% to 8%)	2 6.6% (95% CI 3.8% to 9.4%)
Immersion/touch 3 (1.9%)	–	3 3.8% (95% CI −0.4% to 8%)	–
Third party 3 (1.9%)	2	1	–
Flow 4 (2.6%)	N/A	4 5.1% (95% CI 2% to 12.5%)	N/A
Splash/explosion 4 (2.6%)	1	2 2.6% (95% CI −0.9% to 6%)	1 3.3% (95% CI 1.3% to 5.3%)

Hot Beverages: cup or mug of: tea (278), coffee (67), hot chocolate (6), Lemsip (1).
Domestic water: domestic container unspecified (175), kettle/kitchen pan (39), bath (11), bucket (4), shower or tap water (15), hot water bottle (10), flask (4), pressure cooker/steam/facial steamer (8), washing machine (1).
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*Scald Agents.

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Table 1 Scald agent and mechanism by age (n=709): number of children with scalds from different categories of agent and proportion of each mechanism involved

	Hot beverages* (352)	Domestic water* (267)	Food item* (90)
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Total number of children (554)	305 55% (95% CI 50.[illegible]% to 59.1%)	189 34.1% (95% CI 30.3% to 38.2%)	60 10.8% (95% CI 8.5% to 13.7%)
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Pull-down 17 (11%)	5 10.6% (95% CI 1.8% to 19.4%)	10.3% (95% CI 3.6% to 17%)	4 13.3% (95% CI 9.5% to 17.1%)
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Third party 3 (1.9%)	2	1	–
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*Scald Agents.

Patterns of burns and scalds in children

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Age => mécanisme =>Distribution anatomique prévisible

Table Primary site affected by a scald in 554 children younger than 5 years old and 155 children 5–16 years (percentage of children with scald in each site)

	Children less than 5 years			Children more than 5 years		
Site	% children (n=554)	95% CI	% burns extending beyond and below primary site	% children (n=155)	95% CI	% burns extending beyond and below primary site
Arm	19.3% (107)	16 to 22.6	36.4% (39)	16.1% (25)	10.3 to 21.9	16% (4)
Chest*	17.3% (96)	14.2 to 20.5	67.7% (65)	11% (17)	6 to 15.9	29.4% (5)
Face*	15.9% (88)	13.3 to 19.5	71.5% (63)	7.1% (11)	3 to 11.1	45.5% (5)
Neck/shoulder	11.2% (62)	8.6 to 13.8	82.3% (51)	7.7% (12)	3.5 to 11.9	66.7% (8)
Leg*	10.2% (57)	7.8 to 12.8	49.1% (28)	19.4% (30)	13.2 25.6	10% (3)
Thigh	6.1% (34)	–	52.9% (18)	9.7% (15)	–	6.7% (1)
Lower leg	4.2% (23)	–	43.4% (10)	9.7% (15)	–	13.3% (2)
Hand*	7% (39)	4.9 to 9.0	N/A	15.5% (24)	9.8 to 21.2	N/A
Foot	6% (33)	4 to 8	N/A	5.2% (8)	1.7 to 8.7	N/A
Abdomen	5.2% (29)	3.4 to 7.0	55.2% (16)	9% (14)	4.5 to 13.5	57.1% (8)
Head	3.8% (21)	1.7 to 4.7	80.9% (17)	0.6% (1)	–0.5 to 2.7	100% (1)
Buttocks	1.3% (7)	0.4 to 2.2	71% (5)	2.6% (4)	0.1 to 5.0	50% (2)
Back	0.7% (4)	0 to 1.4	50% (2)	1.9% (3)	–0.25 to 4.0	33.3% (1)
Groin	0.2% (1)	–0.2 to 0.6		3.2% (5)	0.4 to 5.9	60% (3)
Unknown	1.8% (10)			0.6% (1)	–0.5 to 2.7	
Total	554		28 651.6%	155		40 25.8%

*p<0.05.

Patterns of burns and scalds in children

A M Kemp, S Jones, Z Lawson, S A Maguire

Agent causal + mécanisme + âge = Distribution anatomique prévisible

Table 2 Primary site affected by a scald in 554 children younger than 5 years old and 155 children 5–16 years (percentage of children with scald in each site)

	Children less than 5 years			Children more than 5 years		
Site	% children (n=554)	95% CI	% burns extending beyond and below primary site	% children (n=155)	95% CI	% burns extending beyond and below primary site
Arm	19.3% (107)	16 to 22.6	36.4% (39)	16.1% (25)	10.3 to 21.9	16% (4)
Chest*	17.3% (96)	14.2 to 20.5	67.7% (65)	11% (17)	6 to 15.9	29.4% (5)
Face*	15.9% (88)	13.3 to 19.5	71.5% (63)	7.1% (11)	3 to 11.1	45.5% (5)
Neck/shoulder	11.2% (62)	8.6 to 13.8	82.3% (51)	7.7% (12)	3.5 to 11.9	66.7% (8)
Leg*	10.2% (57)	7.8 to 12.8	49.1% (28)	19.4% (30)	13.2 25.6	10% (3)
Thigh	6.1% (34)	–	52.9% (18)	9.7% (15)	–	6.7% (1)
Lower leg	4.2% (23)	–	43.4% (10)	9.7% (15)	–	13.3% (2)
Hand*	7% (39)	4.9 to 9.0	N/A	15.5% (24)	9.8 to 21.2	N/A
Foot	6% (33)	4 to 8	N/A	5.2% (8)	1.7 to 8.7	N/A
Abdomen	5.2% (29)	3.4 to 7.0	55.2% (16)	9% (14)	4.5 to 13.5	57.1% (8)
Head	3.8% (21)	1.7 to 4.7	80.9% (17)	0.6% (1)	−0.5 to 2.7	100% (1)
Buttocks	1.3% (7)	0.4 to 2.2	71% (5)	2.6% (4)	0.1 to 5.0	50% (2)
Back	0.7% (4)	0 to 1.4	50% (2)	1.9% (3)	−0.25 to 4.0	33.3% (1)
Groin	0.2% (1)			3.2% (5)	0.4 to 5.9	60% (3)
Unknown	1.8% (10)			0.6% (1)	−0.5 to 2.7	
Total	554			155		40 25.8%

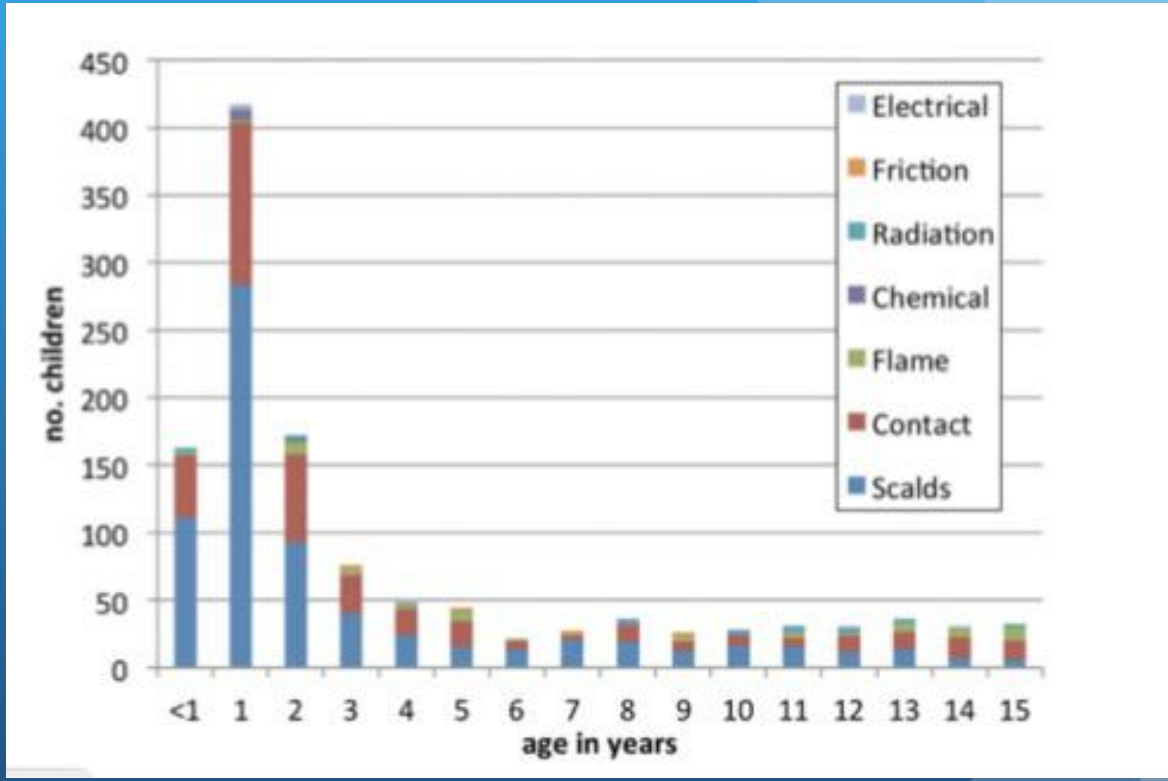
*p<0.05.

Distribution asymétrique
Rare : OGE, fesses, tête, dos

Patterns of burns and scalds in children

A M Kemp, S Jones, Z Lawson, S A Maguire

- **Agent causal**
  - Liquides chauds 58%
  - Solides chauds 32%
  - Autre 10%



Patterns of burns and scalds in children

A M Kemp, S Jones, Z Lawson, S A Maguire

- Agent causal et mécanisme différents -5A / +5A

Table 3 Contact burn agent and mechanism by age (n=390): number of children with contact burns from different categories of agent and proportion of each mechanism involved

	Portable household agents* (160)	Fixed household agents* (145)	Outdoor agents* (74)	Miscellaneous* (11)
Mechanism in those aged <5 years				
Total number of children (n=277)	135 (48.7%)	117 (42.2%)	22 (7.9%)	3
Touch: 224 (80.8%)	103 (76.3%) (95% CI 68.5% to 82.7%)	105 (89.7%) (95% CI 82.3% to 94.4%)	16 (72.7%) (95% CI 51.9% to 86.9%)	
Fall 22: (7.9%)	9 (6.7%) (95% CI 3.6% to 12.2%)	9 (7.7%) (95% CI 4% to 14%)	4 (18.2%) (95% CI 7.3% to 38.5%)	
Pull-down: 16 (5.8%)	16 (11.85%) (95% CI 7.4% to 18.4%)			
Step on: 10 (3.6%	7	1	2	
Miscellaneous 5 (1.8%)		2		3
Mechanism in those aged >5 years				
Total number of children (n=113)	25 (22%)	28 (24.7%)	52 (46%)	8 (7%)
Touch 62 (5.5%)	19 (76%) (95% CI 56.6% to 88.5%)	23 (82%) (95% CI 64.4% to 92.1%)	15 (28.9%) (95% CI 18.3% to 42.3%)	5 (62.5%) (95% CI 30.6% to 86.3%)
Fall 10 (8.8%	4	3	3	
Pull-down: 1	1			
Step on 4: (3.5%)	1	2	1	
Explosion 31 (27.4%)			31 (59.6%) (95% CI 46% to 71.8%)	
Miscellaneous:5 (4.4%)			2	3

Portable household: iron (60), hair straighteners (57), light bulb (13), kitchen pan (19), chip pan (4), oven tray (4), curling tongs (1), food (1), cigarette (1).
Fixed household: oven hob (76), oven door (27), radiator (22), radiator pipe (6), heater (7), fireplace (5), sauna coals (1), steam press (1).
Outdoor: firework (43), BBQ (11), motorcycle exhaust (9), bonfire (3), food (2), car exhaust (2), generator (1), soldering iron (1), sand (1), gas bottle (1).
Miscellaneous: plastic toy (2), sweat test electrode (2), plastic camera case (1), test tube (1), Bunsen Burner (1), metal can/plate (2), candle wax (2).
*Contact burn agents.

67% mains

Patterns of burns and scalds in children

A M Kemp, S Jones, Z Lawson, S A Maguire

Table 3 Contact burn agent and mechanism by age (n=390): number of children with contact burns from different categories of agent and proportion of each mechanism involved

	Portable household agents* (160)	Fixed household agents* (145)	Outdoor agents* (74)	Miscellaneous* (11)
Mechanism in those age <5 years				
Total number of children (n=277)	13 (48.7%)	11 (42.2%)	22 (7.9%)	3
Touch: 224 (80.8%)	103 (76.3%) (95% CI 68.5% to 82.7%)	105 (89.7%) (95% CI 82.3% to 94.4%)	16 (72.7%) (95% CI 51.9% to 86.9%)	
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Step on: 10 (3.6%	7	1	2	
Miscellaneous 5 (1.8%)		2		3
Mechanism in those aged >5 years				
Total number of children (n=113)	25 (22%)	28 (24.7%)	52 (46%)	8 (7%)
Touch 62 (5.5%)	19 (76%) (95% CI 56.6% to 88.5%)	23 (82%) (95% CI 64.4% to 92.1%)	15 (28.9%) (95% CI 18.3% to 42.3%)	5 (62.5%) (95% CI 30.6% to 86.3%)
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Miscellaneous: plastic toy (2), sweat test electrode (2), plastic camera case (1), test tube (1), Bunsen Burner (1), metal can/plate (2), candle wax (2).
*Contact burn agents.

Patterns of burns and scalds in children

A M Kemp, S Jones, Z Lawson, S A Maguire

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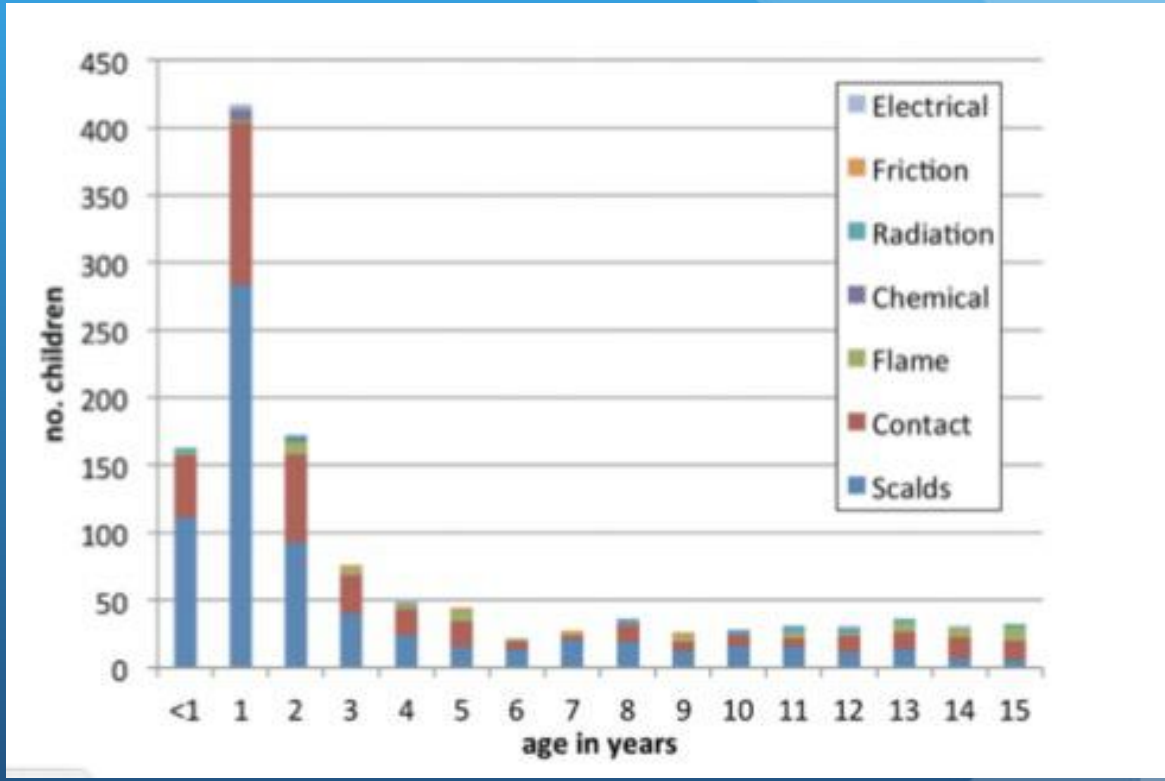
Miscellaneous: plastic toy (2), sweat test electrode (2), plastic camera case (1), test tube (1), Bunsen Burner (1), metal can/plate (2), candle wax (2).
*Contact burn agents.

Patterns of burns and scalds in children

A M Kemp, S Jones, Z Lawson, S A Maguire

- **Agent causal**
  - Liquides chauds 58%
  - Solides chauds 32%
  - Autre 10%



Patterns of burns and scalds in children

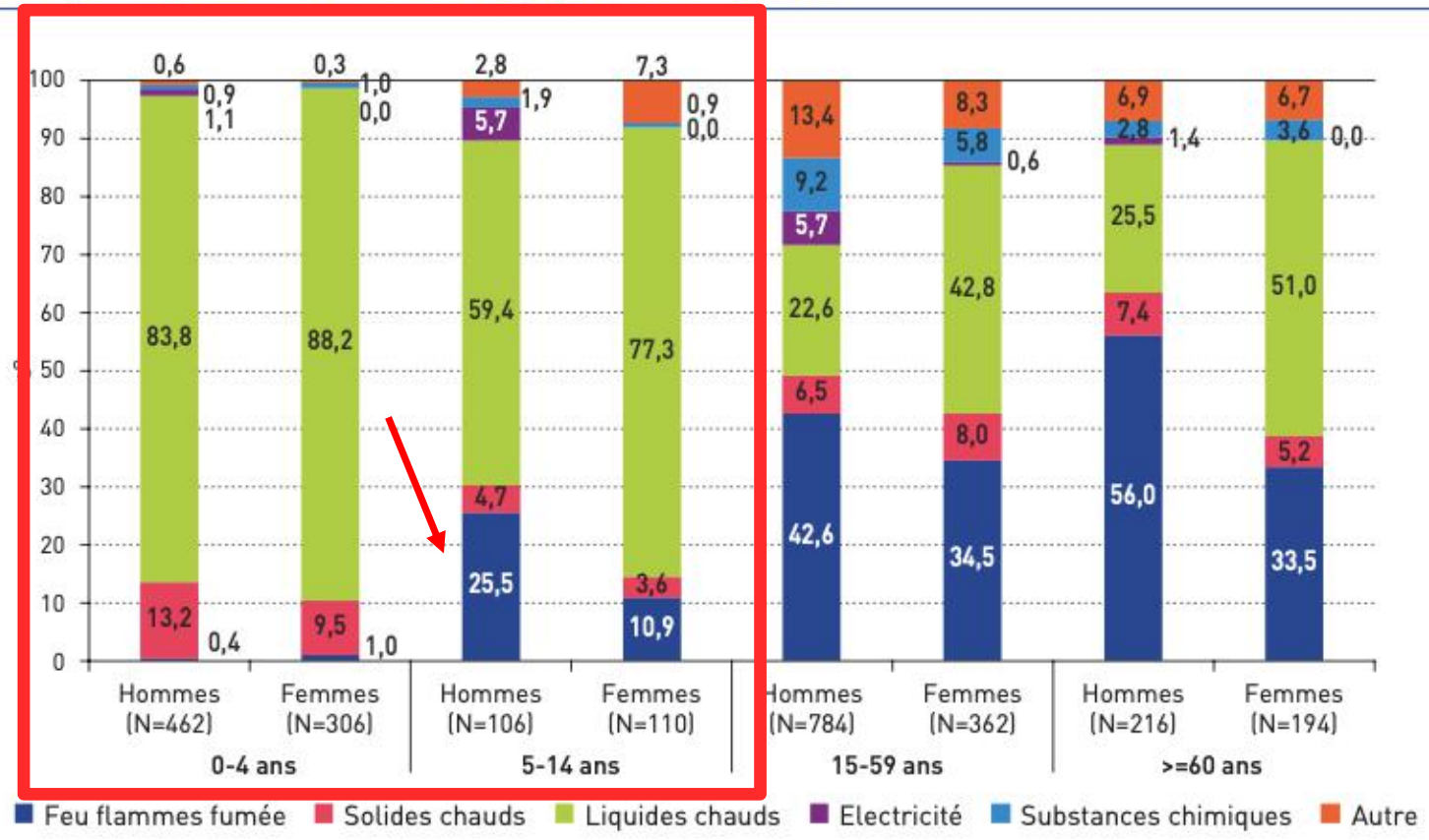
A M Kemp, S Jones, Z Lawson, S A Maguire

- Agent causal et mécanisme différents -5A / +5A

Table 4 Other burn agents and the number of children involved

Flame (67)	Radiation (20)	Friction (11)	Chemical (13)	Electrical (5)
Home (23)	Sunburn (19)	Treadmill (8)	Cleaning fluid (6)	Electric cable (4)
Fireplace (17)	Sun bed (1)	Slide (2)	Oven cleaner (2)	Operative cautery (1)
Candle (5)		Bicycle wheel (1)	Deep Heat (1)	
Gas hob (1)			Soap (1)	
Outdoors (18)			Superglue (1)	
Bonfire (13)			Pepper spray (1)	
Barbeque (4)			White spirit (1)	
Tent (1)				
Fuel related (26)				
Petrol (11)				
Aerosol and lighter (8)				
Cigarette lighter (6)				
Gas bottle (1)				

FIGURE 3 | **Répartition des causes de brûlures accidentelles des victimes hospitalisées en CTB et résidant en France métropolitaine selon le sexe et l'âge, PMSI-MCO, 2014**



Santé publique France

LES VICTIMES DE BRÛLURES HOSPITALISÉES EN FRANCE MÉTROPOLITAINE EN 2014 ET ÉVOLUTION DEPUIS 2009

Facteurs socio démographiques

Facteurs socio-démographiques

Incidence supérieure chez asiatiques et africains/afro-caraïbéens

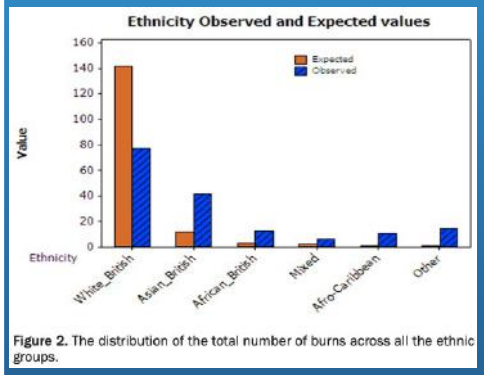


Figure 2. The distribution of the total number of burns across all the ethnic groups.

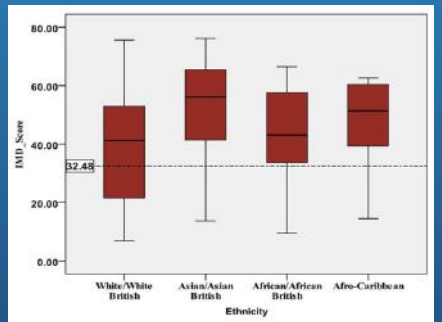


Figure 4. Mean Index of Multiple Deprivations scores by ethnic origin for all burn injury cases.

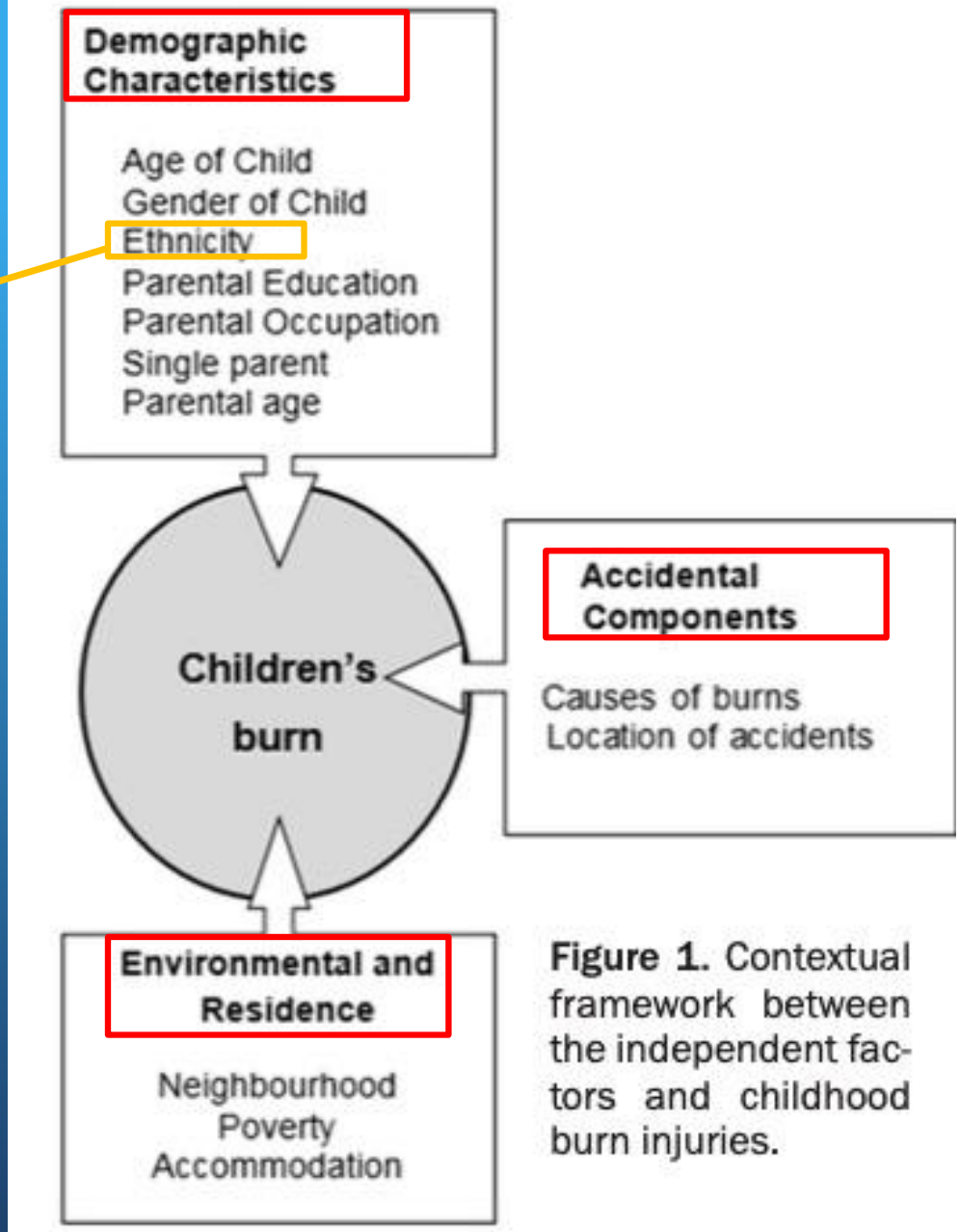


Figure 1. Contextual framework between the independent factors and childhood burn injuries.

Socio-demographic factors which significantly relate to the prediction of burns severity in children

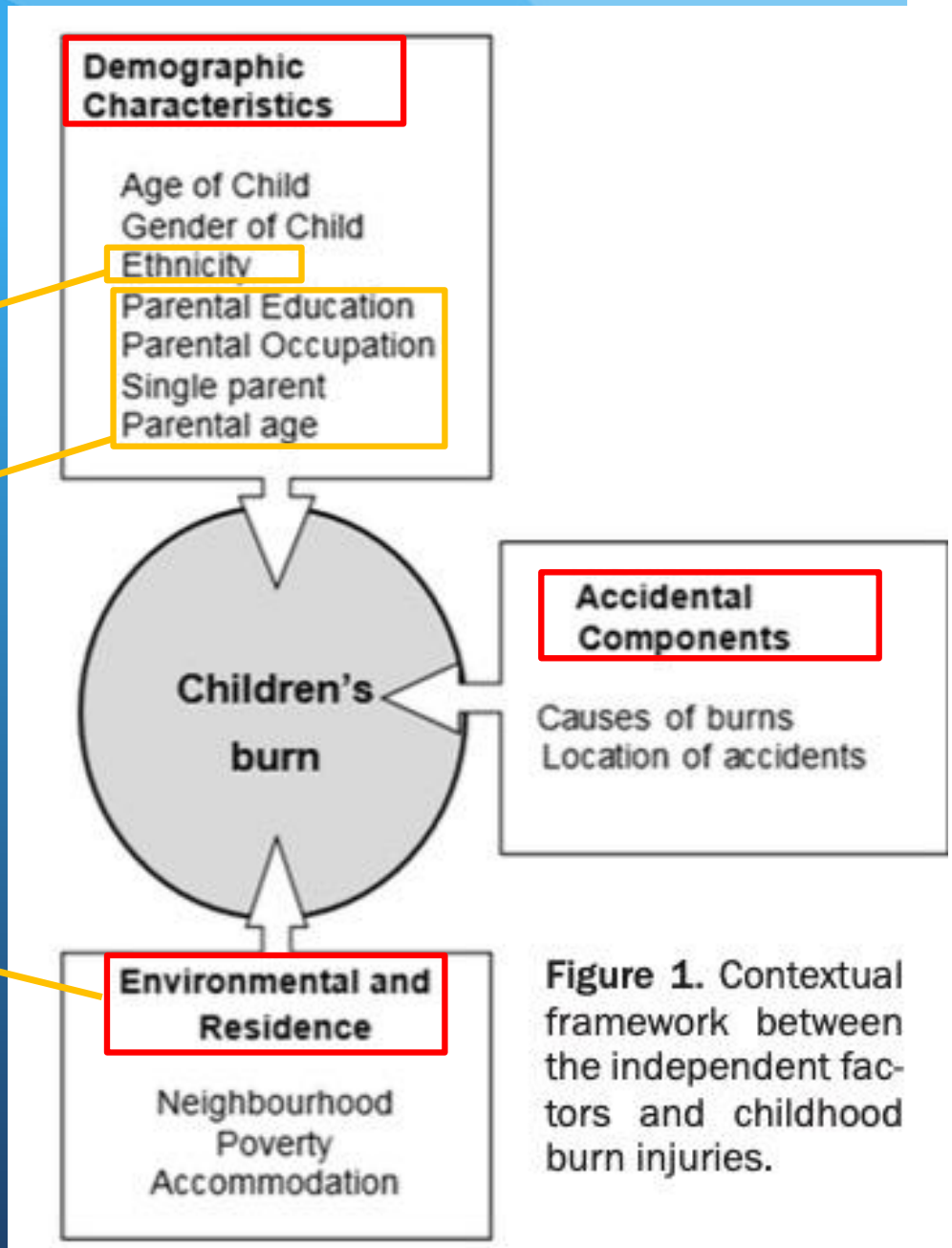
Khalid Alnababtah[1], Salim Khan[2]

Facteurs socio-démographiques

Incidence supérieure chez asiatiques et africains/afro-caraïbéens

Parents jeunes <25 ans
Familles mono-parentales
Faible niveau éducatif

Revenus faibles -> logement précaire/social -> installations électriques chauffage, électroménager défaillants



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Socio-demographic factors which significantly relate to the prediction of burns severity in children

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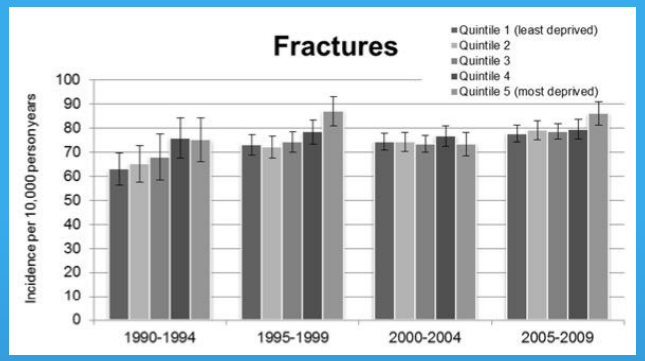


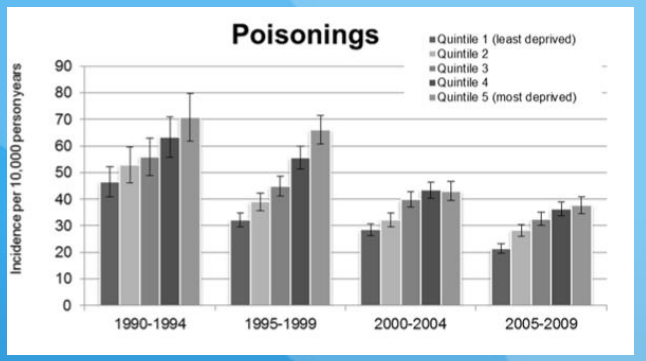
Pauvreté

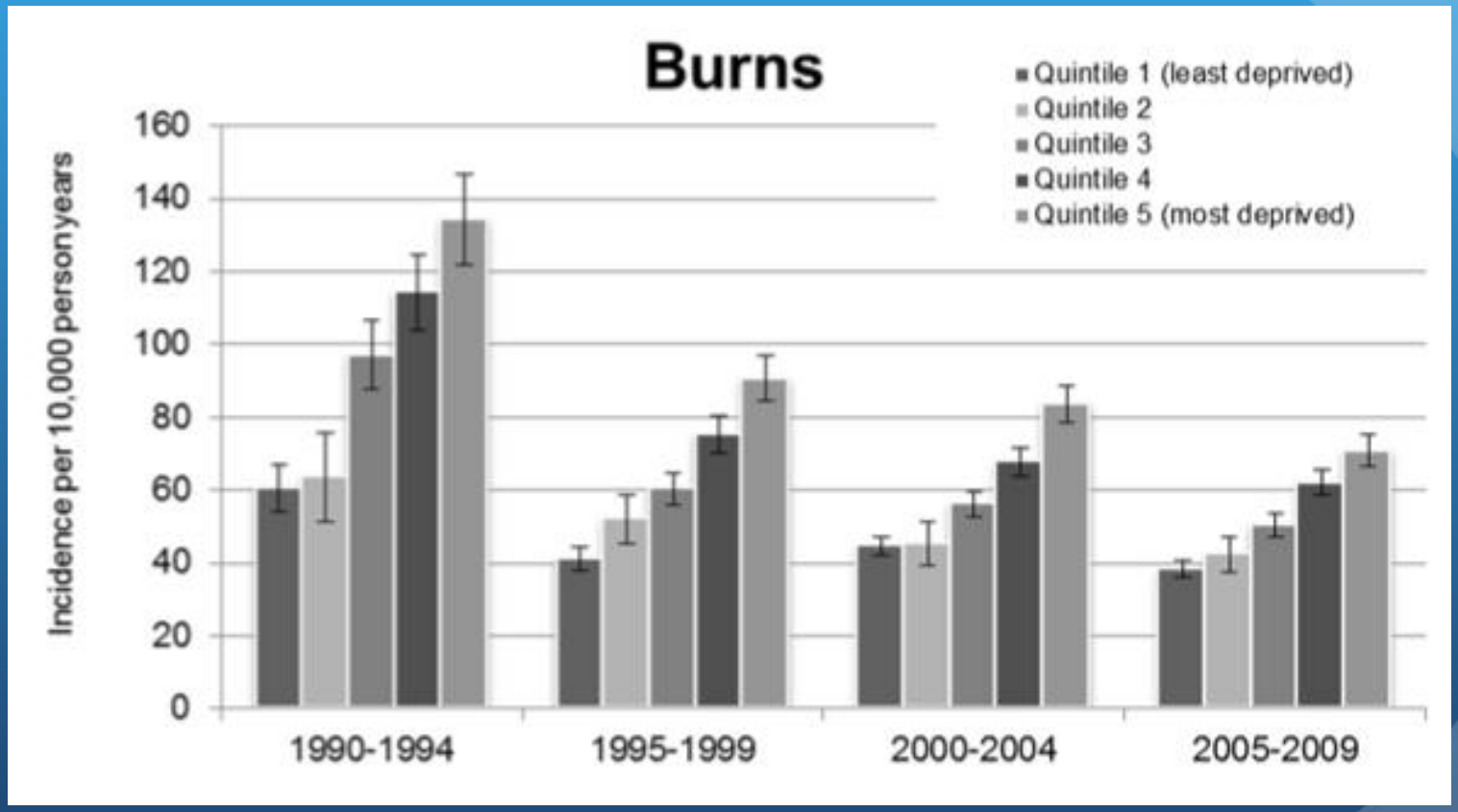
Risque attribuable

Fractures 3%

Intoxications 28%

Brûlures 30%





Persistence of Health Inequalities in Childhood Injury in the UK; A Population-Based Cohort Study of Children under 5

Elizabeth Orton[1*], Denise Kendrick[2], Joe West[3], Laila J. Tata[4]

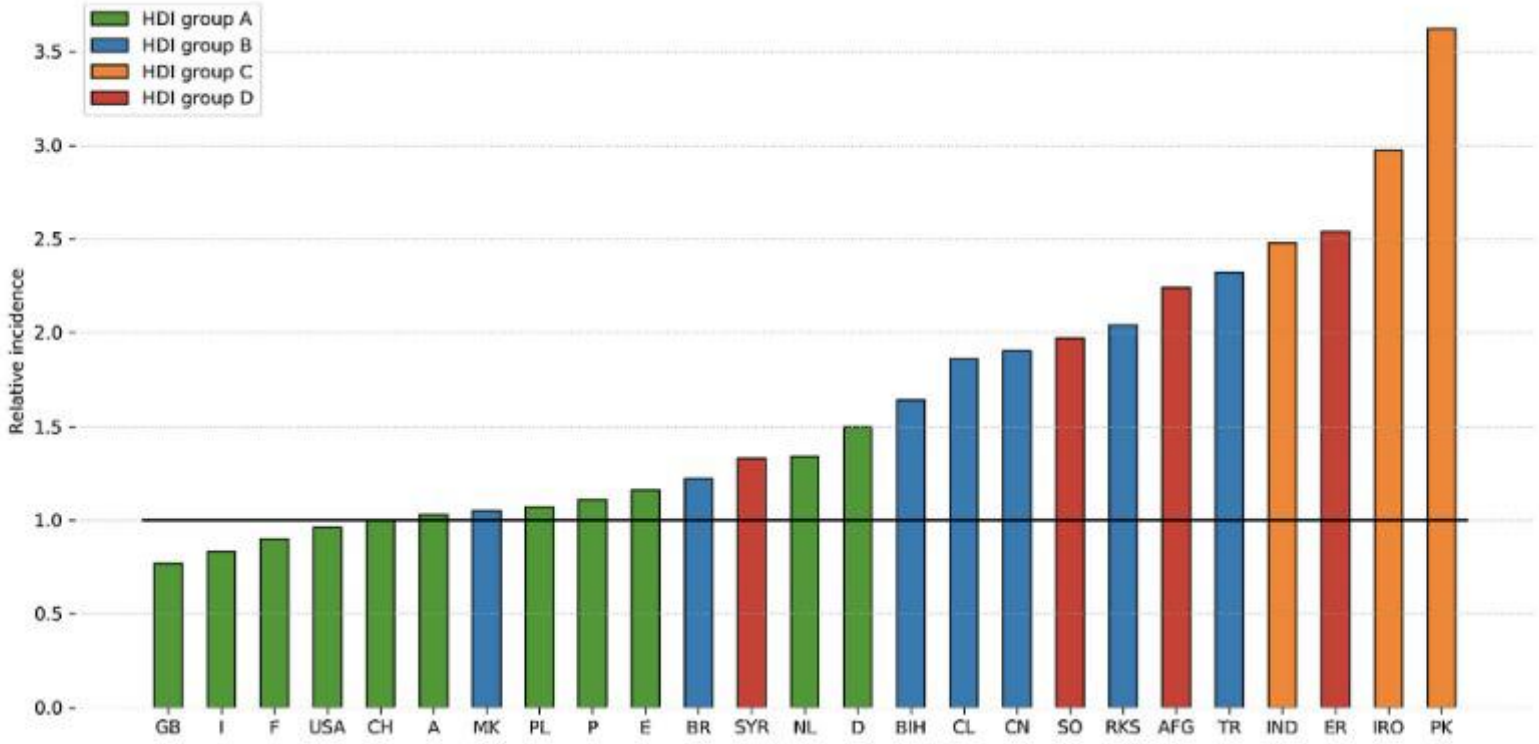


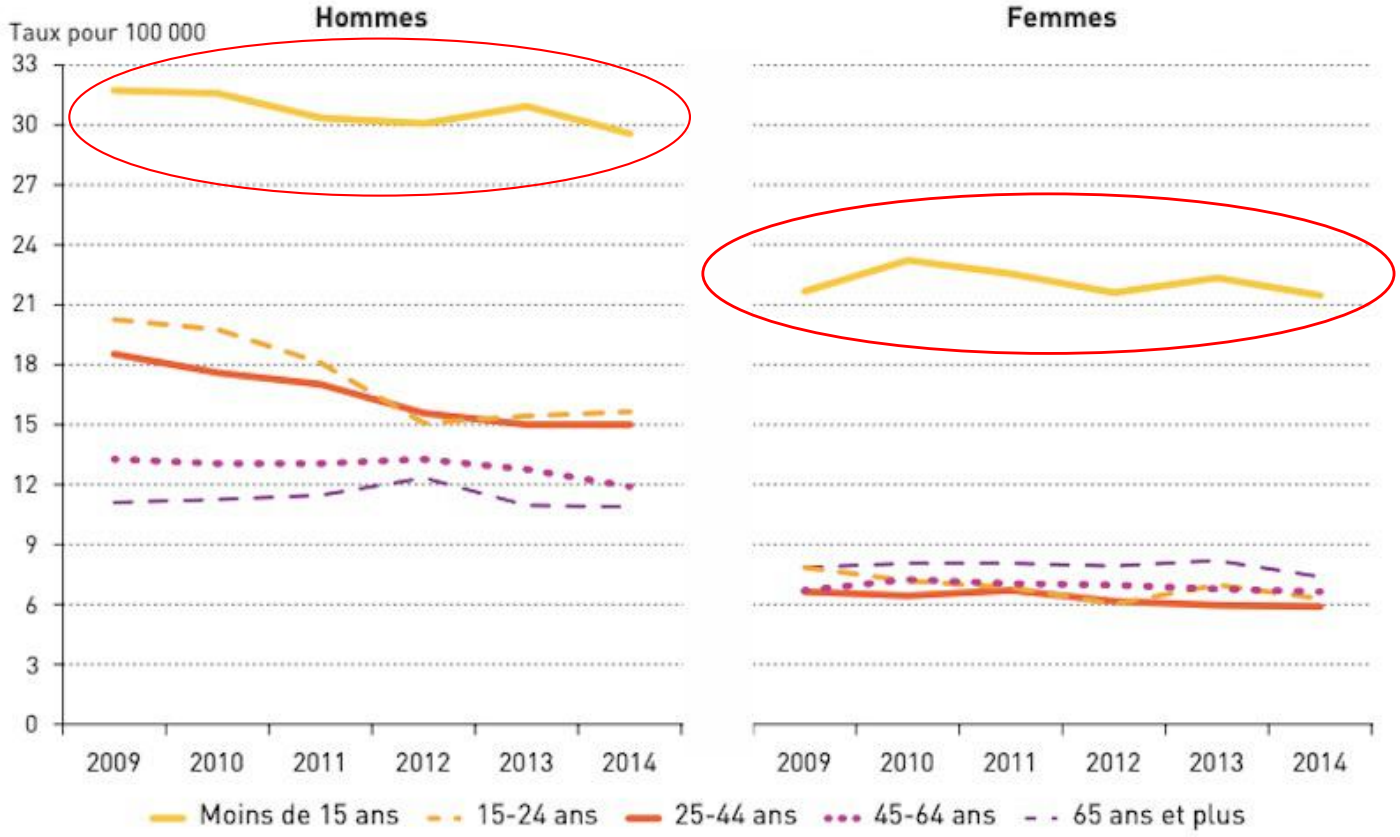
Fig. 3 – Relative incidence of burns in distinct groups of patients by country from which patients emigrated. Countries belonging to Human Development Index (HDI) group A in red, B in blue, C in orange and D in red. Incidence of native Swiss patients is defined as 1, also indicated by the horizontal black line. Countries from left to right: Great Britain (GB), Italy (I), France (F), United States of America (USA), Switzerland (CH), Austria (A), Macedonia (MK), Poland (PL), Portugal (P), Spain (E), Brazil (BR), Syria (SYR), The Netherlands (NL), Germany (D), Bosnia and Herzegovina (BIH), Sri Lanka (CL), China (CN), Somalia (SO), Kosovo (RKS), Afghanistan (AFG), Turkey (TR), India (IND), Eritrea (ER), Iraq (IRQ), Pakistan (PK). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Incidence, severity and pattern of burns in children and adolescents: An epidemiological study among immigrant and Swiss patients in Switzerland

Julia Elrod [a,*], *Clemens M. Schiestl* [a], *Christoph Mohr* [a], *Markus A. Landolt* [b,c]

- Evolution, mortalité

FIGURE 7 | Évolution par classe d'âge des taux d'incidence bruts (pour 100 000 habitants) des hommes et des femmes hospitalisés pour brûlures et résidant en France métropolitaine, PMSI-MCO, 2009-2014



Santé publique France

LES VICTIMES DE BRÛLURES HOSPITALISÉES EN FRANCE MÉTROPOLITAINE EN 2014 ET ÉVOLUTION DEPUIS 2009

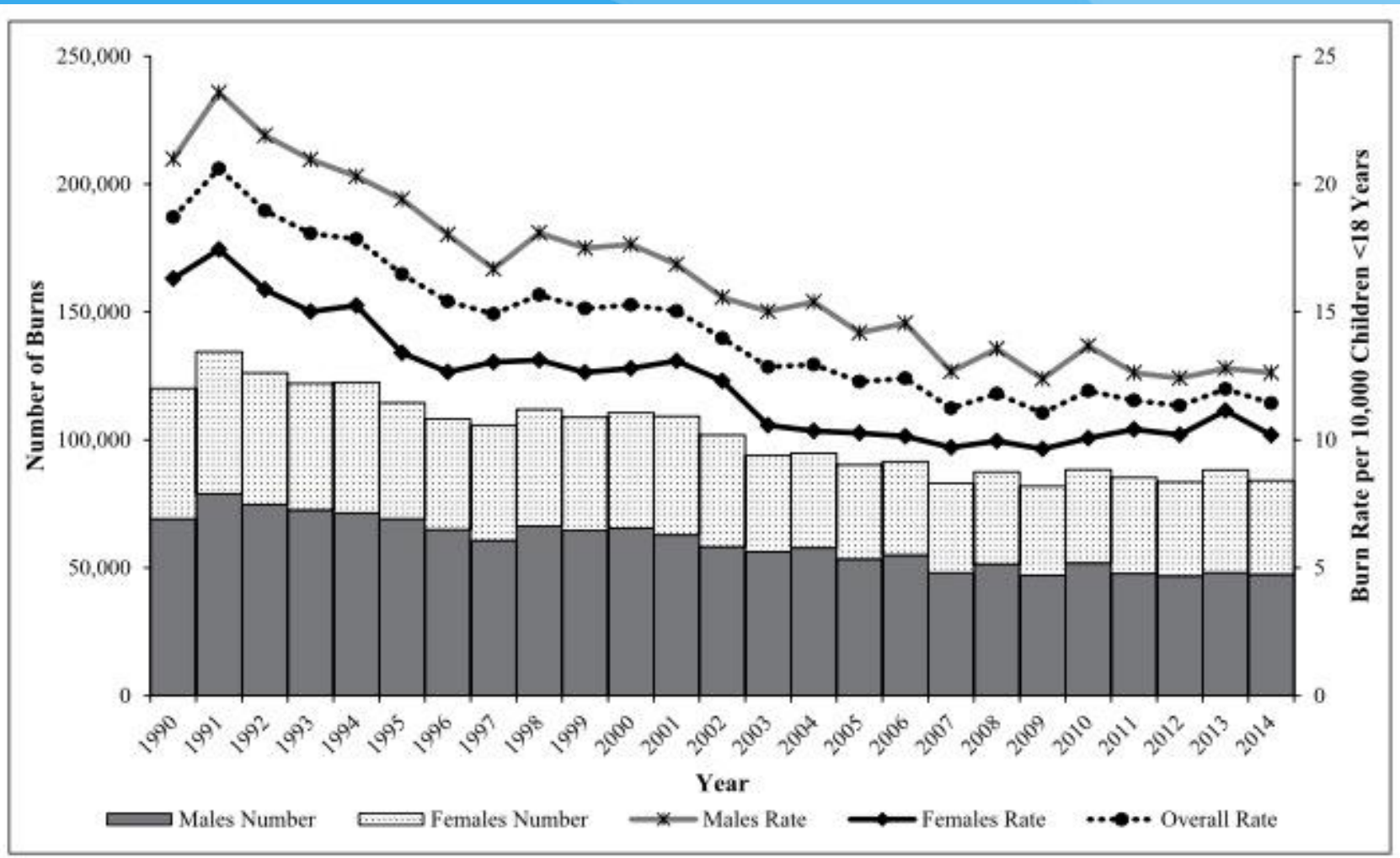


Figure 1. Annual number and rate of children younger than 18 years treated for burns in US emergency departments by year and by sex, National Electronic Injury Surveillance System 1990-2014.

Children Younger Than 18 Years Treated for Nonfatal Burns in US Emergency Departments

Meghan Mitchell, MD[1,2], Sandhya Kistamgari, MPH[1], Thitphalak Chounthirath, MS[1], Lara B. McKenzie, PhD, MA[1,3], and Gary A. Smith, MD, DrPH[1,3,4]

Clinical Pediatrics
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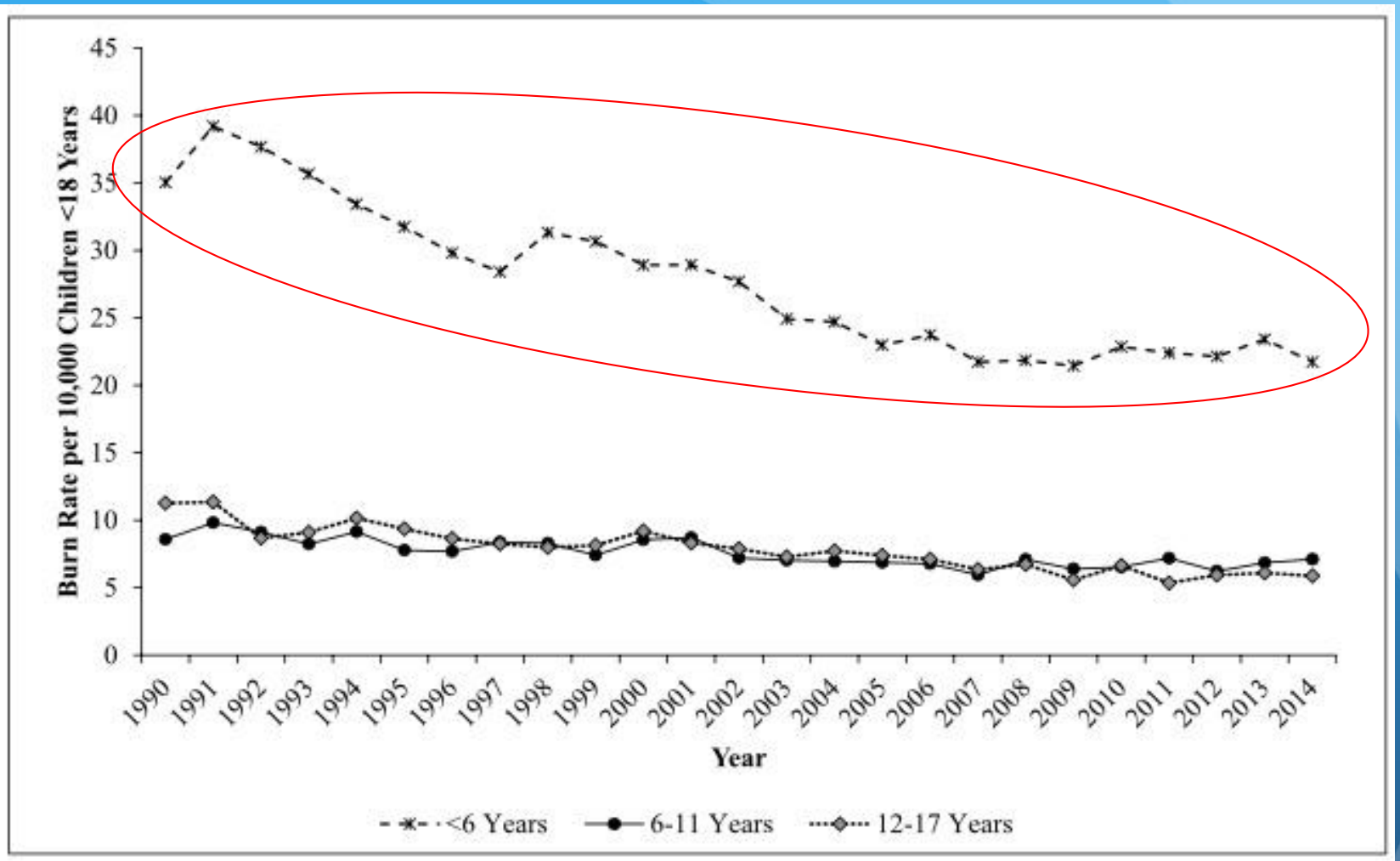

Figure 2. Annual rate of children younger than 18 years treated for burns in US emergency departments by year and age group, National Electronic Injury Surveillance System 1990-2014.

Children Younger Than 18 Years Treated for Nonfatal Burns in US Emergency Departments

Clinical Pediatrics
2020, Vol. 59(1) 34–44
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Meghan Mitchell, MD[1,2], Sandhya Kistamgari, MPH[1], Thitphalak Chounthirath, MS[1], Lara B. McKenzie, PhD, MA[1,3], and Gary A. Smith, MD, DrPH[1,3,4]

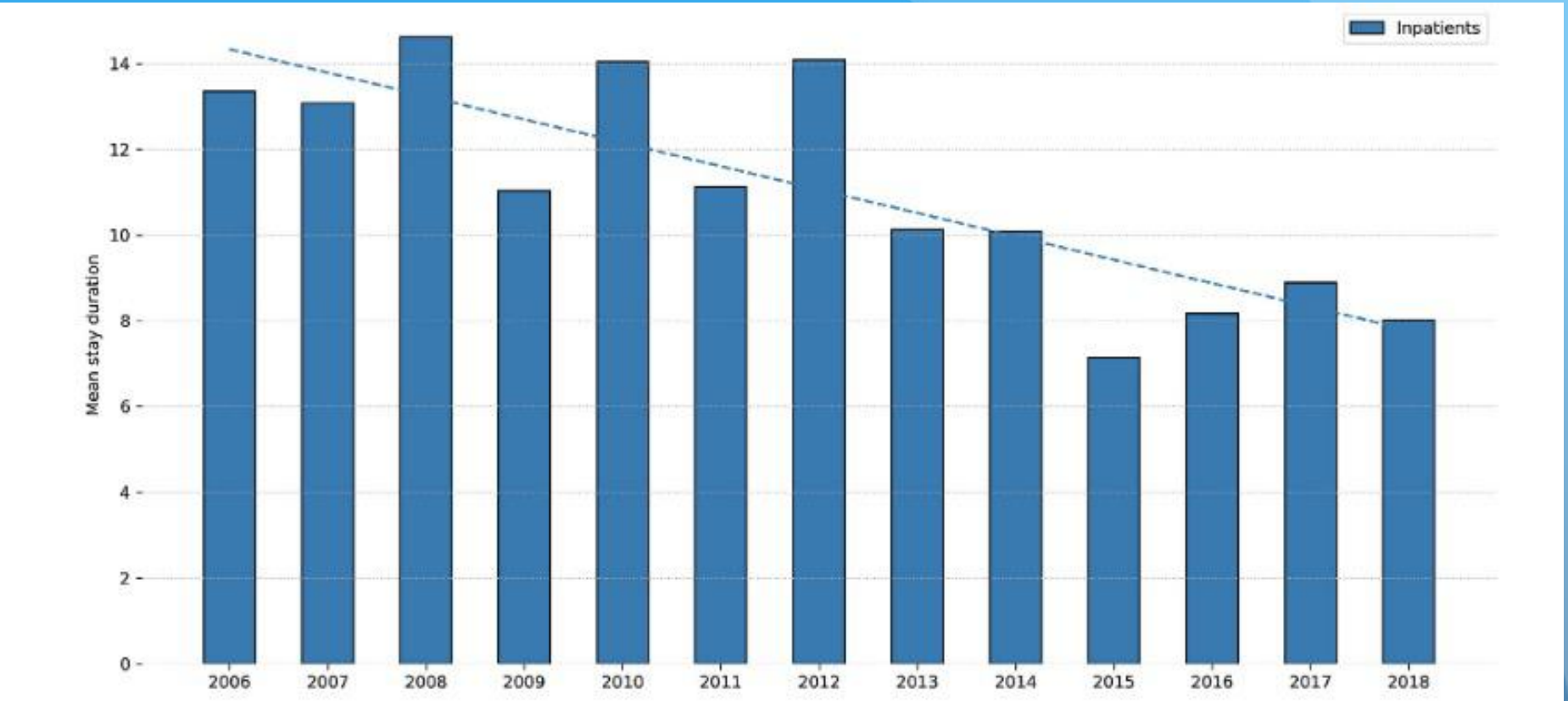


Fig. 2 – Mean duration of hospitalization by year. Mean length of stay (inpatients only) shows a significant temporal decline (F=2.43; p=0.04).

Incidence, severity and pattern of burns in children and adolescents: An epidemiological study among immigrant and Swiss patients in Switzerland

Julia Elrod [a,*], *Clemens M. Schiestl* [a], *Christoph Mohr* [a], *Markus A. Landolt* [b,c]

Diminution de l'incidence des brûlures

- Etudes portant sur urgences/hospitalisations : plus de PEC ambulatoires?
- Politiques de santé publiques++, prévention, éducation. A renforcer++ (exemple de Harstad)
- Réglementaires?
  - Diminution des brûlures par briquets et cigarettes :
    - Diminution du tabagisme
    - Cigarettes de faible propension à l'inflammation 2011
    - Briquets protège enfants
  - Incendies : DAAF 03/15
  - Limitation T° eau robinet 11/05
  - Portes froides four, Protections radiateurs
- Fers à repasser : Messages de prévention, vêtements infroissables, sèche linge programme « prêt à ranger »

Mortalité

- 400 morts/an dont ½ à l'hôpital
- Taux de létalité intra hospitalier 2,3%
- Très peu de décès <15 ans
- 2 décès 0-5 ans en 2014
- Diminution de la mortalité liée aux brûlures infantiles de moitié depuis années 50
  - Prévention, éducation, actions de SP
  - Avancées techniques réanimation et chirurgie

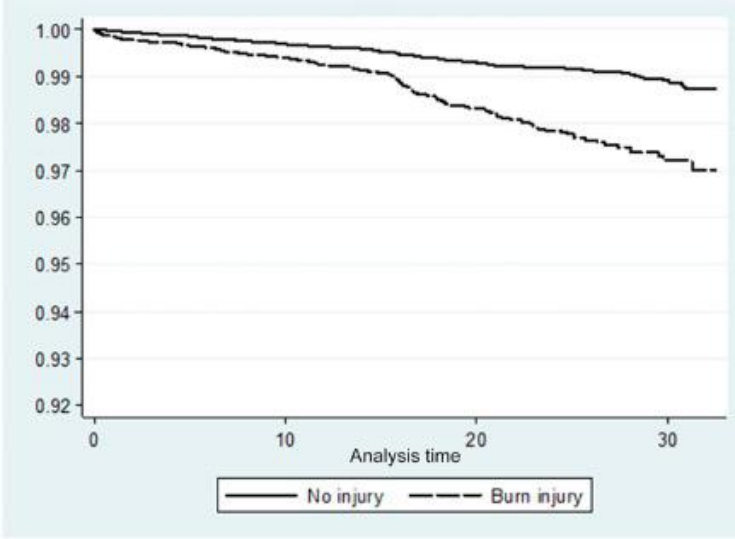
Mortality After Burn Injury in Children: A 33-year Population-Based Study

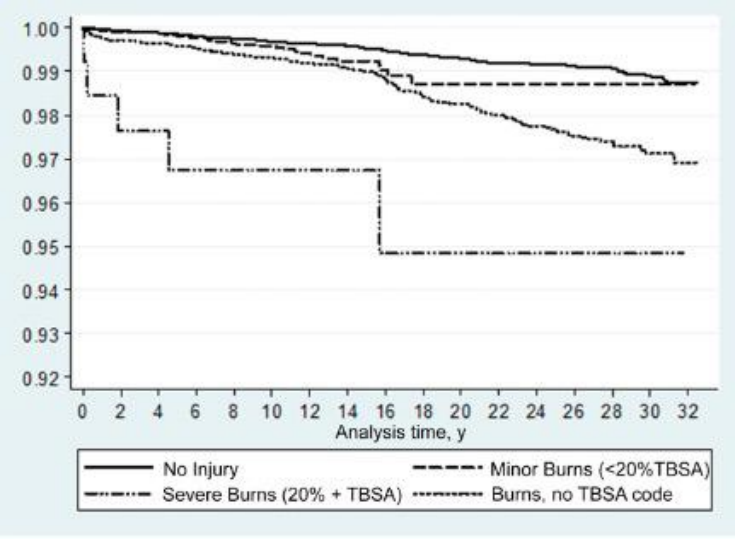
Janine M. Duke, PhD[a], Suzanne Rea, MB, BCh, PhD[a,b], James H. Boyd, BSc (Hons)[c], Sean M. Randall, BSc (Hons)[c], Fiona M. Wood, MBBS[a,b]

- Etude australienne
- Rétrospective portant sur
- 10000 enfants brûlés<15 ans
- Inclus entre 1980 et 2012
- Médiane de suivi de 18 ans

- **Survie à long terme reste significativement diminuée**
- **Mortalité x1,6 sur long terme**
  - Facteur de confusion :

  prédisposition à se mettre en danger?
  - Impact physiologique ?
  - Impact psychologique
    - Augmentation des addictions (tabac, OH, drogues)
  - Impact socio économique
    - chômage, isolement social





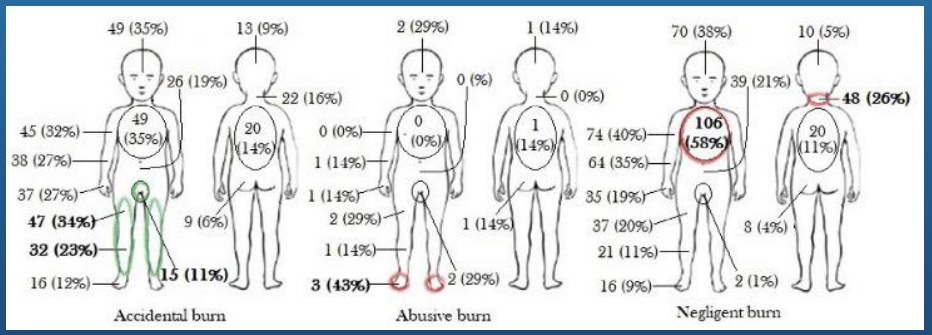
Quand évoquer une maltraitance?

- **Brûlures intentionnelles**
  - 6 à 20% des maltraitances
  - 2 à 25% des brûlures sont intentionnelles
- < 3 ans+++
- Brûlures
  - plus profondes
  - associées à une mortalité plus élevée
  - et à des durées d'hospitalisation plus longues
- Eau bouillante 80%
- Sémiologie pas toujours spécifique : faisceau d'indices

Localisation peu discriminante

Table 3 – Distribution of negligent and non-intentional burns and calculated odds ratios with 95% Confidence Interval.

Location	p-Value	OR (95% CI) Neglect vs Non-intentional
Face	0.413	1.21 (0.76–1.93)
Head (other than face)	0.264	0.60 (0.24–1.49)
Neck	**0.017***	**1.98 (1.12–3.50)***
Anterior trunk	**<0.001***	**2.75 (1.73–4.35)***
Abdomen	0.549	1.19 (0.68–2.08)
Posterior trunk	0.464	0.77 (0.39–1.54)
Upper arm	0.066	1.56 (0.97–2.49)
Forearm	0.098	1.51 (0.93–1.72)
Hand	0.218	0.71 (0.41–1.23)
Buttocks	0.564	0.74 (0.27–2.04)
Genital	**<0.001***	**0.09 (0.02–0.40)***
Thigh	**0.009***	**0.51 (0.30–0.85)***
Lower leg	**0.031***	**0.50 (0.26–0.95)***
Feet	0.550	0.79 (0.37–1.70)



Child abuse and neglect in paediatric burns: The majority is caused by neglect and thus preventable

Marie-Louise H.J. Loos [a,], Annebeth Meij-de Vries [a,b], Michelle Nagtegaal [c,d], Roel Bakx [a], in collaboration with the KARIBU-group [1]*

- Pas d’explication à la blessure ou l’explication est incompatible avec la brûlure
- L’enfant ne se déplace pas seul
- La brûlure est située sur une zone cutanée que l’on imagine pas pouvoir entrer en contact avec un objet chaud de manière accidentelle (par ex : le dos des mains, la plante des pieds, les fesses, le dos)
- A la forme d’un objet (ex:cigarette, fer à repasser)
- Ou qui indique une immersion forcée

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Par eau chaude

Fig. 3 – A case of intentional scald, showing bilateral lower limb and perineal/buttock involvement, clear upper margins and uniform depth.

Fig. 4 – A case of accidental scald, caused by pulling down a hot liquid, showing irregular margins and variable depth.

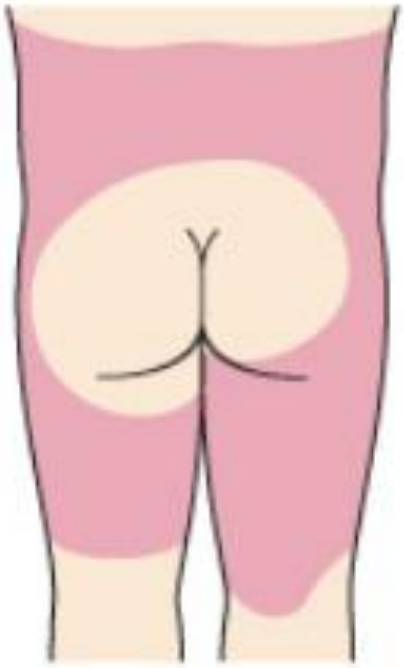
Immersion forcée	Eclaboussure/renversement
Lésions symètriques Limites nettes Uniformes en profondeur Extrêmités, en chaussette/gant Fesses, périné Atteinte zébrée tronc Aspect en doughnut des fesses	Difficile de différencier intentionnel/non intentionnel + superficielles Asymètriques Sans limite nette Visage, face antérieure du tronc, cou

A systematic review of the features that indicate intentional scalds in children

S. Maguire [a,*], S. Moynihan [a], M. Mann [b], T. Potokar [c], A.M. Kemp [a]

Forced submersion in a flexed position

'Zebra' stripe



'Doughnut hole' sparing

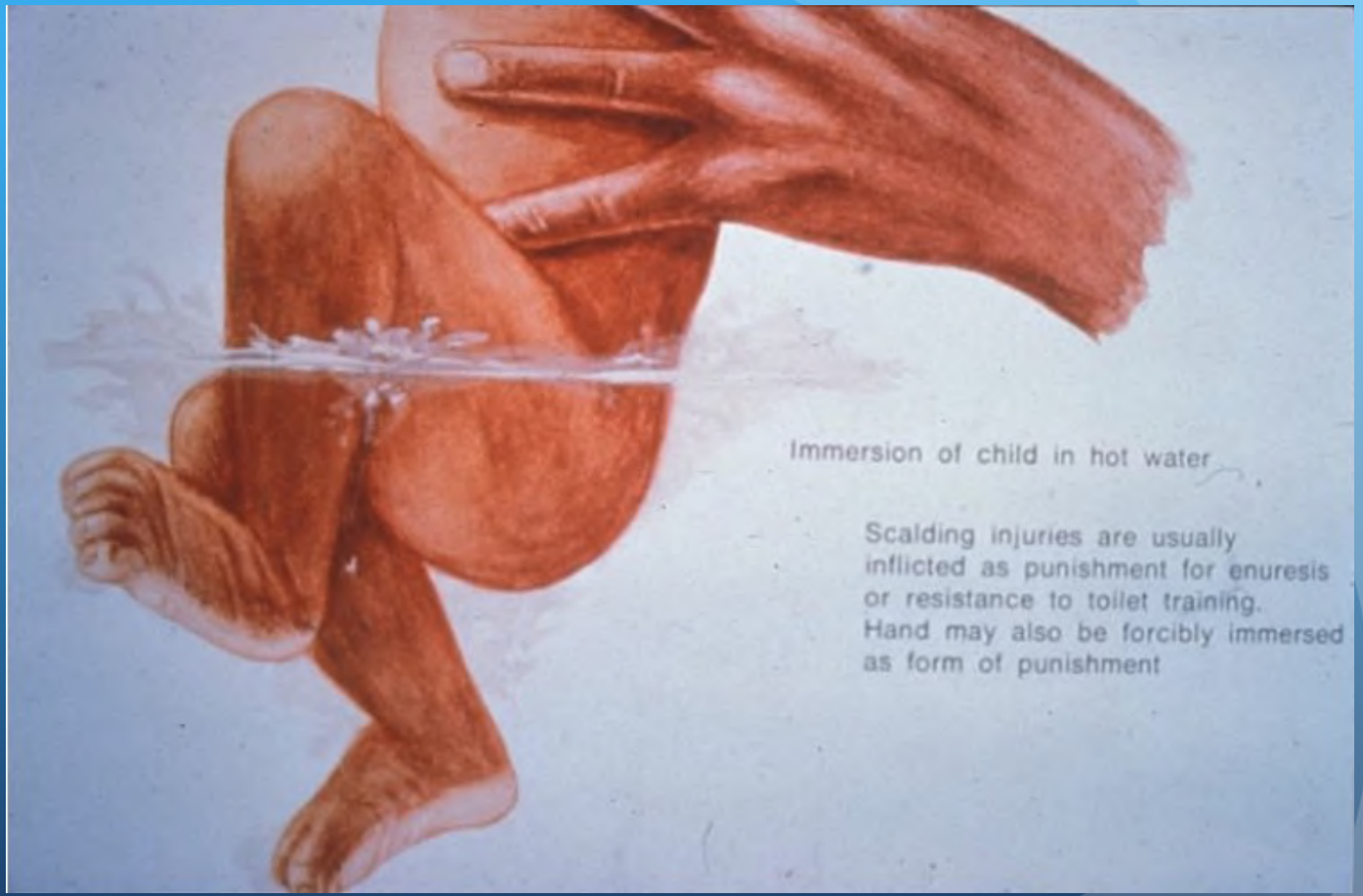
Annales de Chirurgie Plastique Esthétique
Volume 65, Issue 1, February 2020, Pages 31-35

Article original

Brûlures par immersion chez l'enfant et maltraitance

Burns by immersion in children and abuse

P. Ridel [a] ✉, M. Lemesle [b], N. Vabres [b], U. Lancien [a], P. Perrot [a] ✉



Immersion of child in hot water

Scalding injuries are usually inflicted as punishment for enuresis or resistance to toilet training. Hand may also be forcibly immersed as form of punishment

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Dgc souvent moins facile…

Signes cutanés des sévices à enfants (à l'exclusion des sévices sexuels)

A. Lasek-Duriez[a,*], C. Léauté-Labrèze[b], la Société française de dermatopédiatrie

A systematic review of the features that indicate intentional scalds in children

S. Maguire [a,], S. Moynihan [a], M. Mann [b], T. Potokar [c], A.M. Kemp [a]*

Intentional scald must be excluded	Intentional scald should be considered	Intentional scald unlikely
Physical features	**Physical features**	**Physical features**
Mechanism: • Immersion		**Mechanism:** • Spill injury • Flowing water injury
Agent: • Hot tap water		**Agent:** • Non tap water (hot beverage)
Pattern: • Clear upper limits • Scald symmetry (extremities)	**Pattern:** • Uniform scald depth • Skin fold sparing • Central sparing buttocks	**Pattern:** • Irregular margin and burn depth • Lack stocking distribution
Distribution: • Isolated scald buttock/perineum • +/- lower extremities • Isolated scald lower extremities	**Distribution:** • Glove and stocking distribution • 1 limb glove/stocking	**Distribution:** • Asymmetric involvement lower limbs • Head, neck and trunk or face and upper body
Clinical Features: • Associated unrelated injury • History incompatible with examination findings • Co-existing fractures	**Clinical features:** • Previous burn injury • Neglect / faltering growth • History inconsistent with assessed development	
Historical / Social features: • Passive, introverted, fearful child • Previous abuse • Domestic violence • Numerous prior accidental injuries • Sibling blamed for scald	**Historical / Social features:** • Trigger, such as: Soiling / enuresis / misbehaviour • Differing historical accounts • Lack of parental concern • Unrelated adult presenting child • Child known to social services	

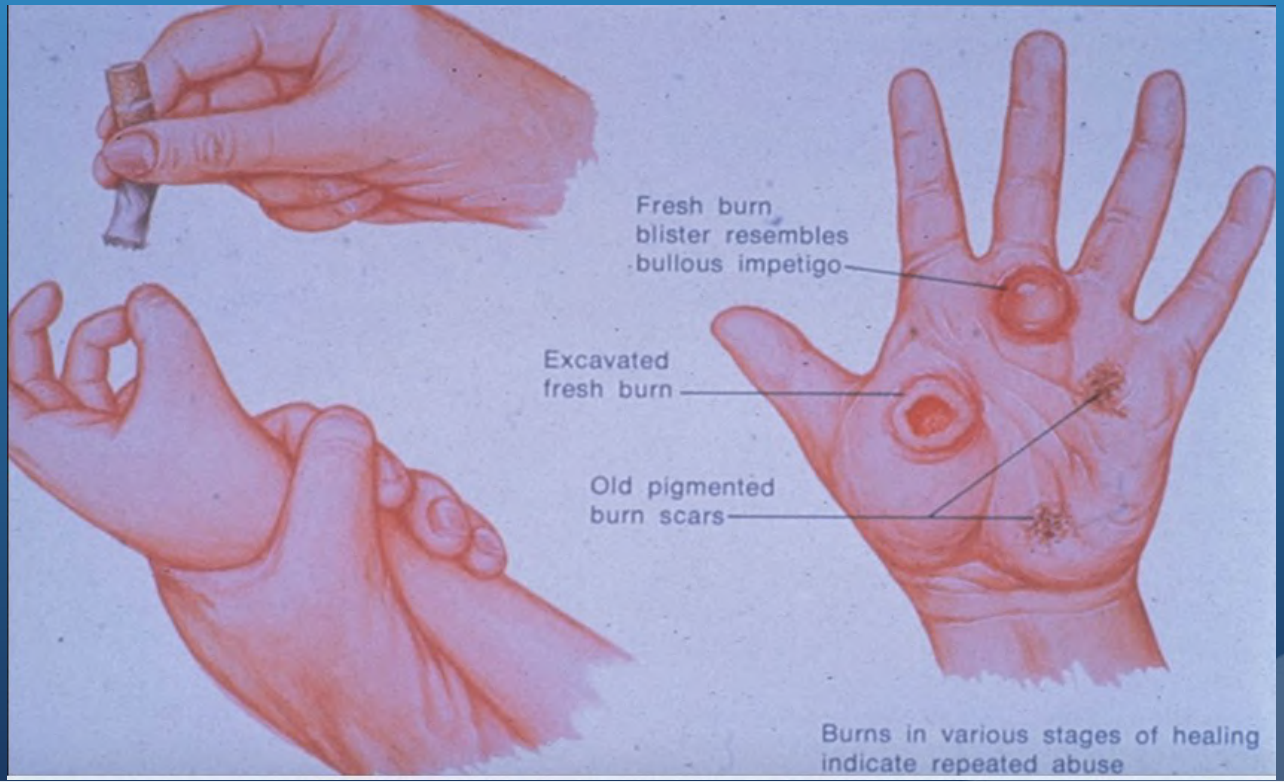
Délai consultation >2h

Par contact

- Brûlures uniformes
- Bien délimitées
- Sur zones couvertes
- Fesses, périné, visage, face dorsale des pieds et mains
- Rarement sur tête, bras, nuque, face antérieure du tronc

Brûlures de cigarettes

- Paumes et dos des mains et des pieds
- Zones couvertes du corps
- Zones cachées : OGE, pli interfessier, aisselles
- 7 à 10mm, rondes bien délimitées avec crôute centrale, très douloureuses, souvent multiples et groupées



Falling Clothes Irons Rarely Cause Burns

David Allasio, LMSW, Christina Shanti, MD

Children's Hospital of Michigan's Burn Center treats approximately three pediatric contact burns annually related to clothes irons, which involve the face, torso, and extremities. These burns leave well-demarcated burn patterns, including the steam holes from the heat plate of the iron. The average age of these children is 15 months. The history given by the parent is that the child pulled the cord of an iron that was on an ironing board or high shelf. It seemed unlikely to the investigators that a falling iron would produce such demarcated burns. A free-standing shelf unit was built with shelf heights of 36, 60, and 72 inches (the height of an ironing board and shelves at home). Three irons of different weights were put in three different positions on each shelf, with the cord dangling. A doll the approximate size of a 15-month old was positioned in front of the shelf. The dangling cord was pulled, and the falling iron was videotaped. The video was edited in freeze frame at the point at which the iron hit the doll. Two hundred seventy falls were recorded. The flat heat plate of the iron never hit the doll. The linear edge of the heat plate hit the doll on only seven falls. This study demonstrates that it is very unlikely for the flat heat plate of a falling iron to contact a toddler-sized doll. Children who allegedly sustain demarcated burns in this manner need to be investigated for nonaccidental injury. (J Burn Care Res 2014;35:525–527)

Tableau 1 Principaux diagnostics différentiels des signes cutanés de maltraitance.

Ecchymoses	Brûlures	Alopécie	Lésions buccales	Pratiques culturelles
Taches mongoloïdes	Dermatite herpétiforme	Teignes	Aphtose	*Cupping* (saignée par ventouse)
Hémangiomes	Impétigo, ecthyma	Alopécie de traction (tressage)	Pemphigus	*Coining* (frottement avec une pièce de monnaie)
Lymphangiomes	Phytophotodermatoses	Syndrome des cheveux anagènes caduques		Moxibustion (piqûres à l'aide de cônes d'herbes en feu)
Troubles de la coagulation	Érythème pigmenté fixe	Pelade		
Vascularites	Pityriasis lichénoïdes	Trichotillomanie		
Érythème polymorphe	Épidermolyse bulleuse			
Érythème noueux	Épidermolyse staphylococcique			
Purpura fulminans	Syndrome de Steven Johnson, nécrolyse épidermique toxique			
Incontinentia pigmenti	Dermatite à IgA linéaire			
Taches café au lait	Érythème solaire			
Ostéogenèse imparfaite	Insensibilité congénitale à la douleur			
Maladie d'Elhers Danlos				

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Conclusion

- 3ème cause de mort évitable chez l'enfant dans le monde
- Incidence++++ < 5ans (30% des hospit)
- Pic à 1 an+++
- Brûlures par liquides chauds+++ > solides chauds++
- Déterminants sociaux et ethniques
- Diminution de l'incidence dans le temps
- Reste un enjeu prioritaire de santé publique : plus de la moitié des brûlures évitables
- Savoir évoquer une maltraitance et faire appel au centre de référence