Poux

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***EA 7379 EpiDermE et INSERM CIC 1430**

****EA 7380 Dynamyc**

Liens d'intérêt OC (2014-2017)

- **Codexial : don de médicaments pour la recherche, honoraires d'orateurs**
- **KSL consulting : honoraires d'orateur, remboursement de frais de congrès**
- **MSD France : subventions de recherche, honoraires d'orateur, remboursement de frais de congrès**
- **Zambon : honoraires d'orateurs**

Liens d'intérêt (CB)
(2014-2017)

- **Codexial (2017): subvention de recherche**
- **Bioderma (2016) Laboratoire Dermatologique: subvention de recherche**
- **MSD France (2014) : subvention de recherche**

Head-lice: more than a nuisance! Should be treated properly

- Very prevalent worldwide
- Schoolchildren
- Contagious (family, classroom)
- Itchy, superinfection, psychosocial impact, children and parents absenteeism
- Cost (direct, indirect) (1 billion dollars per year in the US !!)
- Improper pediculicide use

Pédiculose du cuir chevelu : traitement : données générales

- Nombreux produits sur le marché
- Peignes fins les plus adaptés (technique stricte) mais intérêt controversé (lentes)
- Eviter rasage
- Plupart des produits vendus directement en pharmacie (OTC): x 3,7 entre 1990 et 1995 UK et Pays de Galles (grandes surfaces ?)
- Coût global/an: UK 29 M £, USA > 350 M $, France 38,5 M € (largement sous estimé !)

Downs AM et al. BJD 1999;141:508-11
Ibarra J et al. Lancet 2000;356:2007
Meinking T et al. J Pediatr 2002;141:665-70
Carré V. Communication personnelle, 01/04

Agents spécifiques

- Pyréthrines et pyréthroïdes
- Malathion (recommercialisé aux USA en 1999)
- Lindane et DDT
- Carbaryl : carcinogène ? Retiré du marché UK
- Pétrole : danger +++

Dennis GA et al. Clin Drug Invest 1999;18:105-15

Modalités d'utilisation (1)

- **Préférer une lotion (spray CI si asthme)**
- **2ème application systématique d'insecticides après 7 à 10 jours (aucun insecticide n'est 100 % lenticide) (voire application intermédiaire supplémentaire pour contrôler la contagiosité)**

Chosidow O. Lancet 2000;355:819-26
www.sante.gouv.fr
Mumcuoglu K. J Drugs Dermatol 2006;5:355-6

Modalités d'utilisation (2)

- **Bien respecter les conseils du fabricant**
- **Malathion lotion appliquée pendant seulement 20 min >>> perméthrine 1% crème 10 min: 40/41 (98%) vs 12/22 (55%) (p < 0,0001)**
- **Gel de malathion 20 min « équivalent » (?) à la lotion appliquée pendant 8-12 h**

Meinking T et al. Pediatr Dermatol 2004;21:670-4
Meinking T et al. Pediatr Dermatol 2007;24:405-11

Behavioural disorders in 6-year-old children and pyrethroid insecticide exposure: the PELAGIE mother–child cohort

Jean-François Viel,[1,2] Florence Rouget,[1,3] Charline Warembourg,[1] Christine Monfort,[1] Gwendolina Limon,[4] Sylvaine Cordier,[1] Cécile Chevrier[1]

Objective The potential impact of environmental exposure to pyrethroid insecticides on child neurodevelopment has only just started to receive attention despite their widespread use. We investigated the associations between prenatal and childhood exposure to pyrethroid insecticides and behavioural skills in 6-year-olds.

Methods The PELAGIE cohort enrolled 3421 pregnant women from Brittany, France between 2002 and 2006. 428 mothers were randomly selected for the study when their children turned 6, and 287 (67%) agreed to participate. Children's behaviour was assessed using the Strengths and Difficulties Questionnaire (SDQ). Three subscales (prosocial behaviour, internalising disorders and externalising disorders) were considered. Five pyrethroid metabolites were measured in maternal and child urine samples collected between 6 and 19 gestational weeks and at 6 years of age, respectively. Logistic regression and reverse-scale Cox regression models were used to estimate the associations between SDQ scores and urinary pyrethroid metabolite concentrations, adjusting for organophosphate metabolite concentrations and potential confounders.

Results Increased prenatal *cis*-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid (DCCA) concentrations were associated with internalising difficulties (Cox p value=0.05). For childhood 3-phenoxybenzoic acid (PBA) concentrations, a positive association was observed with externalising difficulties (Cox p value=0.04) and high ORs were found for abnormal or borderline social behaviour (OR 2.93, 95% CI 1.27 to 6.78, and OR 1.91, 95% CI 0.80 to 4.57, for the intermediate and highest metabolite categories, respectively). High childhood *trans*-DCCA concentrations were associated with reduced externalising disorders (Cox p value=0.03).

Conclusions The present study suggests that exposure to certain pyrethroids, at environmental levels, may negatively affect neurobehavioral development by 6 years of age.

2017;**0**:1–7. doi:10.1136/oemed-2016-104035

BMJ

Autres mesures thérapeutiques (1)

- **Traitement systématique de la famille vs sujets parasités seuls: pas d'avantages**
- **Elentage manuel avec peigne adapté (métal >> plastique), ± vinaigre, acide formique**
- **Poudres à usage humain désormais indisponibles**

---> Déparasiter brosses et peignes (biocide comportant un pyrèthroïde ?)

---> Décontamination (machine à laver): quelles modalités ?

Efficacy of Machine Laundering to Eradicate Head Lice: Recommendations to Decontaminate Washable Clothes, Linens, and Fomites

Arezki Izri[1,3] and Olivier Chosidow[2,a]

BRIEF REPORT • CID 2006:42 (15 January) • e9

	Live lice	Dead lice	Total	p value
Without detergent 40°C	115 (94.3%)	7 (5.7%)	122	NS
With detergent 40°C	165 (76.7%)	50 (23.3%)	215	< 0.0001
Controls	117 (98.3%)	2 (1.7%)	119	

Prévention

- Dépistage familial fréquent +++
- Intérêt des campagnes d'information scolaire
- Pas d'intérêt à traiter tous les enfants
- « No nits policy » USA: pas d'intérêt
- Eviter utilisation « prophylactique » des insecticides

Head lice: failure of treatment

- Misdiagnosis (no active infestation or misidentification);
- Lack of adherence (patient unable or unwilling to follow treatment protocol);
- Inadequate treatment (not using sufficient product to saturate hair; failing to follow directions);
- Reinfestation (lice reacquired after treatment);
- Lack of ovicidal or residual killing properties of the product (eggs not killed can hatch and cause selfreinfestation);
- Resistance of lice to the pediculicide.

THE LANCET

Lancet 1994; **344:** 1724–27

Controlled study of malathion and *d*-phenothrin lotions for *Pediculus humanus* var *capitis*-infested schoolchildren

Olivier Chosidow, Claude Chastang, Caroline Brue, Elisabeth Bouvet, Mohand Izri, Nicole Monteny, Sylvie Bastuji-Garin, Jean-Jacques Rousset, Jean Revuz

THE LANCET

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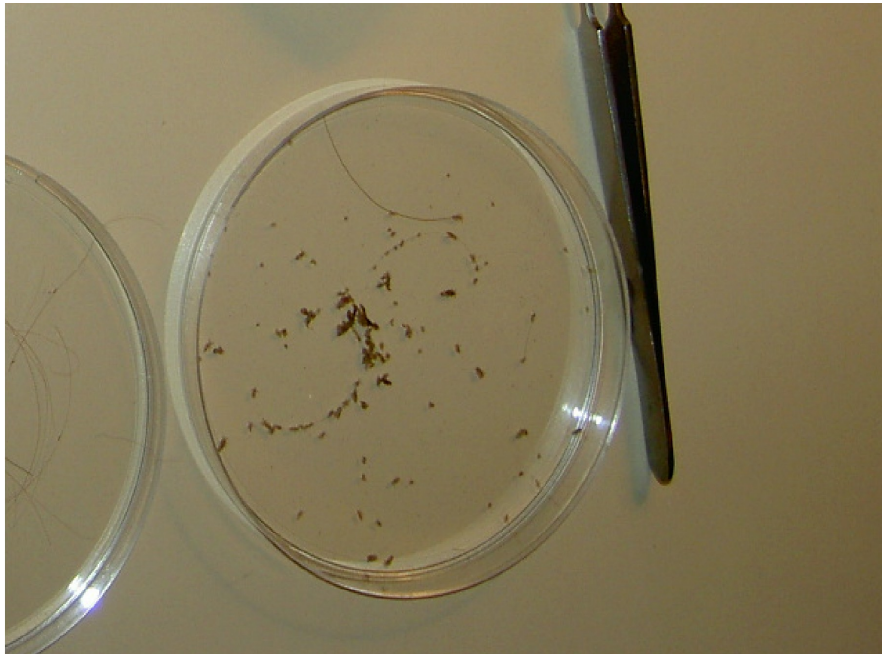
Clinical resistance
RCT

Absence of live lice after malathion (92%, n = 95) vs *d*-phenothrin (40%, n = 98) at day 1

Parasitological resistance
ex vivo tests



Résistance des poux

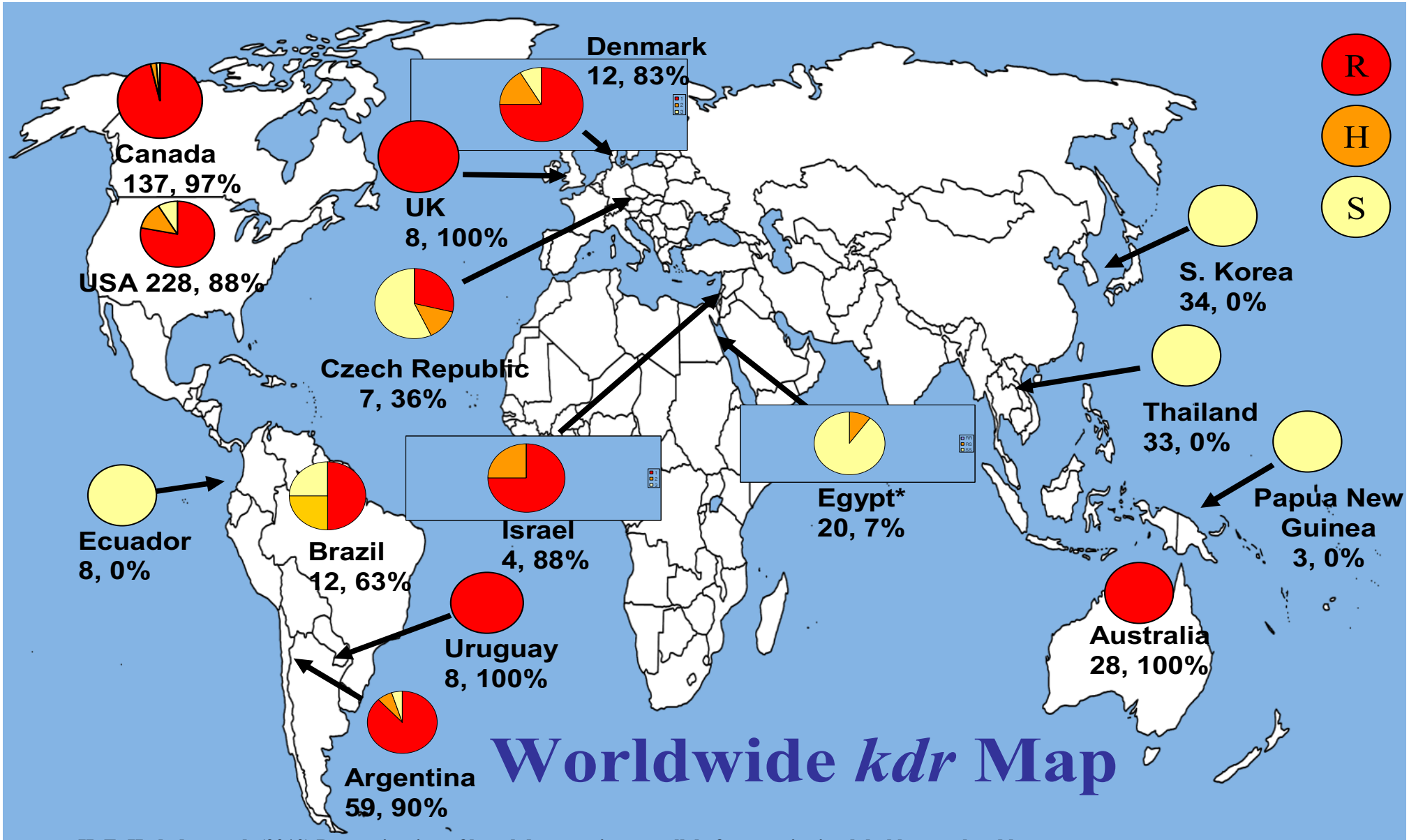
- **Mutations gènes canaux sodiques (M815I-T929I- L932F)**
  - **résistance à la perméthrine : kdr**
  - **mauvais effet neuro-toxique de l'insecticide**
- **Glutathion S-transferase: cible de la résistance au DDT (non croisée avec perméthrine)**
- **Estérase : cible de la résistance au malathion**
- **Monooxygénase (augmentation métabolisme insecticide): cible de la résistance au butoxyde de pipéronyle**

---> Tous ces mécanismes peuvent être présents chez le même insecte (démontré en UK)

---> Importance respective non connue en pop générale

Elston D. Arch Dermatol 2003;139:1061-3

Hodgdon HE et al. Pest Manag Sci 2010;66:1031-40.



H. E. Hodgdon et al. (2010) Determination of knockdown resistance allele frequencies in global human head louse populations using the serial invasive signal amplification reaction. Pest Mang. Sci. (in press, www.interscience.wiley.com) DOI 10.1002/ps.1979

Permethrin and malathion resistance in head lice: Results of ex vivo and molecular assays

Sophie Bouvresse, MD,[a] Zohra Berdjane, PhD,[b] Rémy Durand, Pharm D, PhD,[b] Julie Bouscaillou, MD,[c] Arezki Izri, MD,[b] and Olivier Chosidow, MD, PhD[a]
Paris, France

Background: Treatment of head lice infestation relies on the application of topical insecticides. Overuse of these products has led to the emergence of resistance to pyrethroids and malathion worldwide. Permethrin resistance in head lice is mostly conferred by the knockdown resistance (*kdr*) trait.

Objective: To evaluate the occurrence of permethrin- and malathion-resistant head lice in Paris.

Methods: A prospective survey was conducted in 74 elementary schools. Live lice collected on schoolchildren were randomly selected and submitted to ex vivo bioassays or underwent individual DNA extraction. A fragment of *kdr*-like gene was amplified and compared with wild-type sequences.

Results: Live head lice were detected in 574 children. Ex vivo assays showed no surviving lice after a 1-hour contact with malathion while most lice died after a 1-hour exposure to permethrin and piperonyl butoxide (85.7%, 95% confidence interval [CI]: 83.9-87.5). Among the 670 lice with workable DNA sequences, 661 lice (98.7%, 95% CI 97.7-99.3) had homozygous *kdr* mutations.

Limitations: The findings of this large-scale survey of the occurrence of insecticide-resistant head lice indicated a major insecticide pressure in the study population, but it was not sufficient to draw conclusions about other populations. The presence of T917I-L920F mutations in *kdr* gene may not correlate with treatment failure in prospective studies.

Conclusion: The high occurrence of *kdr* mutant allele suggests that insecticide resistance was already strongly established in the studied population. This finding must be interpreted with caution as it may not be predictive of treatment failure. (J Am Acad Dermatol 2012;67:1143-50.)

doi:10.1016/j.jaad.2012.04.011

JAAD Journal of the American Academy of Dermatology

Résultats des tests de résistance

- **Tests *ex vivo***

	Poux vivants	Poux moribonds	Poux morts	Total testés
MALATHION	0	1	3796 (100%)	3797
SERUM PHYSIO	1962 (97%)	46	13	2021
PERMETHRINE	39 (2,5%)	180 (11,8%)	1312 (85,7%)	1531

- **Tests de biologie moléculaire**

Séquençages sur 670 poux (445 enfants, 67 écoles):

- 661 (98,7%) poux homozygotes résistants
- 9 poux homozygotes sensibles

En pratique :

- Importance d'une surveillance répétée de la sensibilité des poux aux insecticides (épidémiologique, essais thérapeutiques)
- Changer de classe pharmacologique si échec à J1 (renouveler simplement l'application si poux vivants une semaine après)
- Autres alternatives: insecticides et non insecticides

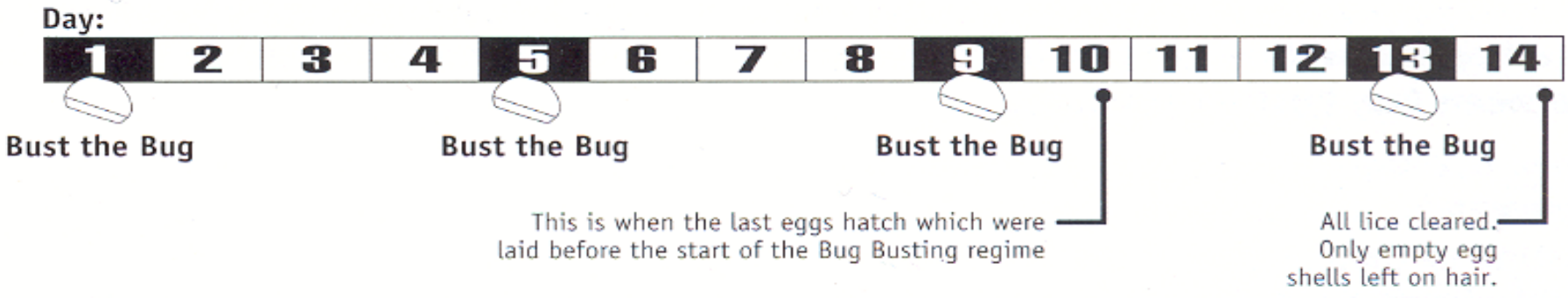
Chosidow O. Lancet 2000;355:819-26
www.sante.gouv.fr
Mumcuoglu K. J Drugs Dermatol 2006;5:355-6

Treatment of head louse infestation
Local treatments

- Bug-busting/lice removal
- Dimeticone (4%, 92%)
- Benzyl alcohol 5% lotion
- Spinosad 0.9% suspension

Roberts RJ et al. Lancet 2000;356:540-4
Hill N et al. BMJ 2005;331:384-7
Chosidow O. Arch Dermatol 2006;142:1635-7
Burgess I et al. BMJ 2005;330:1423-5
Heukelbach J et al. BMC Infect Dis 2008;8:115
Popescu C et al. Arch Dermatol 2012;148:1065-9

“Bug Busting”



0	1	2	3	4	5	6	7	8	9	10	11	12	13	14

ARTICLES

Comparison of wet combing with malathion for treatment of head lice in the UK: a pragmatic randomised controlled trial

THE LANCET • Vol 356 • August 12, 2000

R J Roberts, D Casey, D A Morgan, M Petrovic

Single blind, randomised, comparative study of the Bug Buster kit and over the counter pediculicide treatments against head lice in the United Kingdom

N Hill, G Moor, M M Cameron, A Butlin, S Preston, M S Williamson and C Bass

BMJ 2005;331;384-387; originally published online 5 Aug 2005;
doi:10.1136/bmj.38537.468623.E0

EVIDENCE-BASED DERMATOLOGY: RESEARCH COMMENTARY

Bug Buster for Head Lice

Is It Effective?

Olivier Chosidow, MD, PhD; Université Pierre-et-Marie-Curie-Paris 6 and Department of Dermatology and Allergy, Assistance Publique–Hôpitaux de Paris, Hôpital Tenon, Paris, France

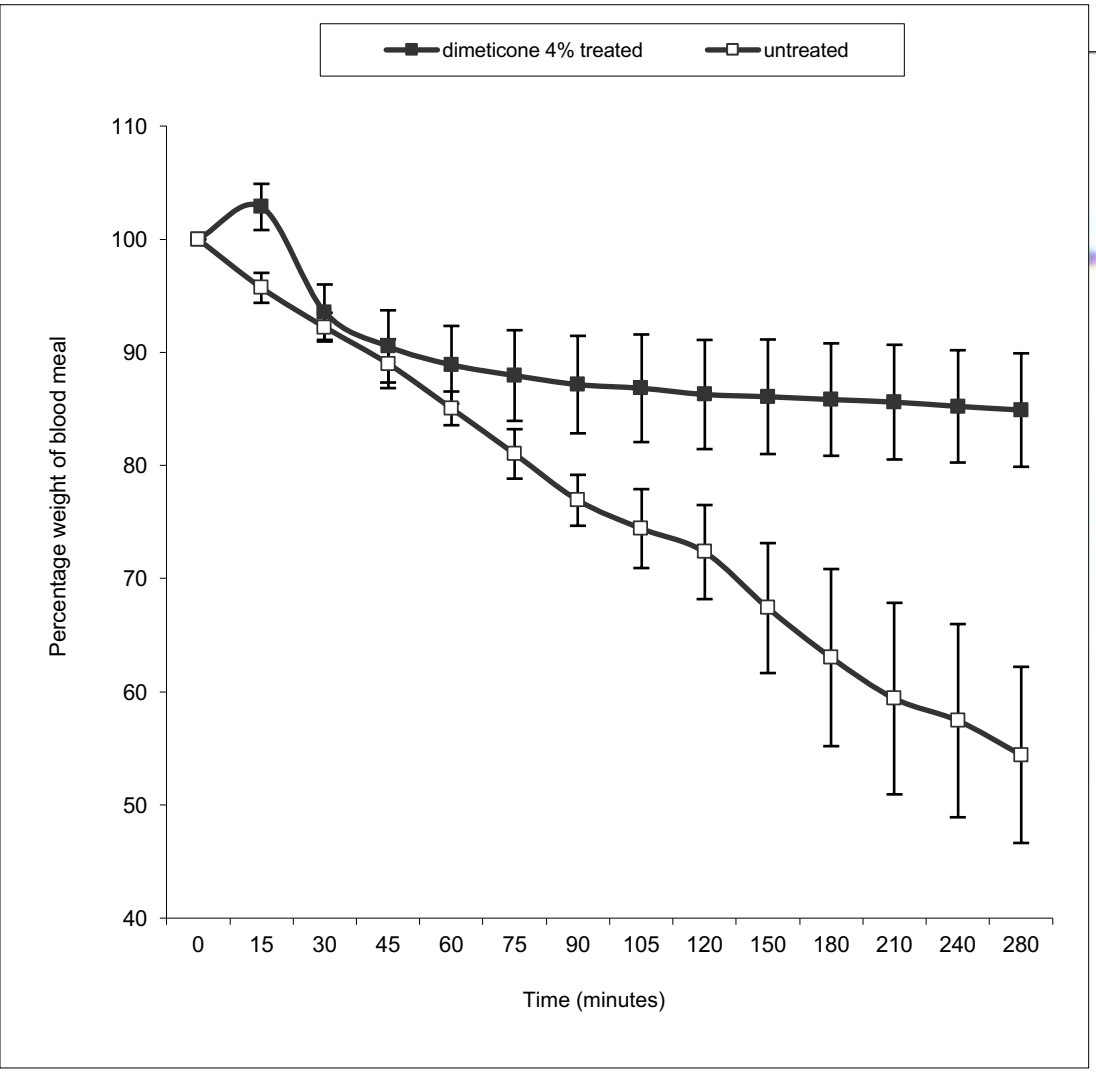
Démêlants/diméticone

- **Diméticone à 92% vs perméthrine 1% lotion (RCT, n = 145) : J2 94,5% vs 66,7%, p < 0,0001 mais pas de J15 !!!**
- **Diméticone à 4% une seule application de 15 min > 2 fois perméthrine 1% 10 min (30/43 (69.8%) vs 7/47 (14.9%)**
- **Pouxit® inflammable: communiqué AFSSAPS, 14/11/08**

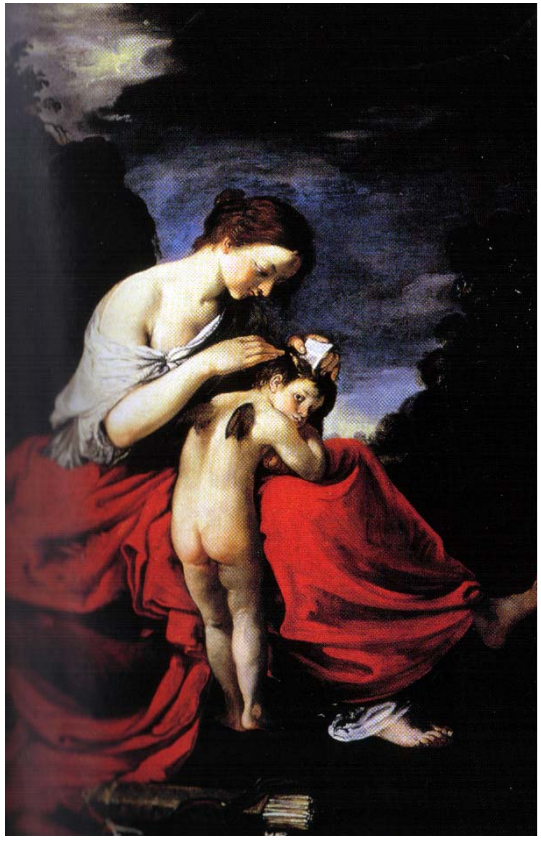
Heukelbach J et al. BMC Infect Dis 2008;8:115
Burgess I et al. BMC Dermatol 2013;13:5

Diméticone à 4% : effet occlusif

Burgess IF. BMC Pharmacol 2009;9:3



Oral ivermectin



---> Interrupts gaba-induced neurotransmission in invertebrates

---> Works systemically

---> Small open study (n = 26), 200 µg/kg, single dosage, 23% efficacy at D14

-→ Phase IIb: value of the 400 µg/kg dosage (repeated 7 days later)

Mumcuoglu KY et al. J Med Entomol 1990;27: 72-5
Glaziou P et al. Trop Med Parasitol 1994;45: 253-4
Merck, in-house data
Meinking T et al. ICP5, August 2-7, 2014

Original Article

Oral Ivermectin versus Malathion Lotion for Difficult-to-Treat Head Lice

Olivier Chosidow, M.D., Ph.D., Bruno Giraudeau, Ph.D., Jeremy Cottrell, M.S., Arezki Izri, M.D., Robert Hofmann, M.D., Ph.D., Stephen G. Mann, M.D., and Ian Burgess, Ph.D.

N Engl J Med
Volume 362(10):896-905
March 11, 2010

The NEW ENGLAND JOURNAL of MEDICINE

Critère principal
Patients sans poux vivants à J15

	IVM (n = 397) N (%)	MALA (n = 414) N (%)	% Différence [$IC_{95\ \%}$] Valeur de p	NNT [$IC_{95\ \%}$]
ITT + LOCF	378 (95,2)	352 (85)	10,2 [4,6 ; 15,7] P < 0,001	9,8 [6,4 ; 21,7]
PP	339 (97,1)	327 (89,8)	7,3 [2,8 ; 11,8] p = 0,002	13,9 [8,5 ; 35,7]

NNT : Number Needed to Treat
ITT : Intention To Treat
LOCF : Last Observation Carried Forward
PP : Per Protocol

Table 3. Clinical Adverse Events, According to Age Group and Primary-Stage Treatment Group.

Adverse Event	Total			2–5 Yr		6–12 Yr		>12 Yr	
	Ivermectin (N=398)	Malathion (N=414)	P Value*	Ivermectin (N=54)	Malathion (N=58)	Ivermectin (N=228)	Malathion (N=226)	Ivermectin (N=116)	Malathion (N=130)
	no. of patients (%)					*no. of patients (%)*			
Serious adverse event†	1 (0.3)	1 (0.2)	1.00	0	0	1 (0.4)	1 (0.4)	0	0
Adverse event the primary reason for discontinuation‡	7 (1.8)	5 (1.2)	0.57	0	0	6 (2.6)	4 (1.8)	1 (0.9)	1 (0.8)
Any adverse event	91 (22.9)	100 (24.2)	0.68	17 (31.5)	10 (17.2)	45 (19.7)	56 (24.8)	29 (25.0)	34 (26.2)
Treatment-related adverse event§	30 (7.5)	45 (10.9)	0.12	2 (3.7)	1 (1.7)	20 (8.8)	27 (11.9)	8 (6.9)	17 (13.1)
Severe adverse event¶	1 (0.3)	2 (0.5)	1.00	0	0	1 (0.4)	1 (0.4)	0	1 (0.8)

* P values were calculated with the use of Fisher's exact test.

† Adverse events were classified as serious according to prespecified criteria (see the Supplementary Appendix, available with the full text of this article at NEJM.org). A 7-year-old girl in the ivermectin group had a seizure 6 days after the first dose of ivermectin and was hospitalized; a right rolandic (centrotemporal) focus was found. She recovered and was discharged with a prescription for oxcarbazepine. An 11-year-old girl in the malathion group had a severe headache 6 days after the first application of malathion lotion and was hospitalized overnight as a precautionary measure; she recovered fully.

‡ The following specific adverse events led to discontinuation: in the ivermectin group, impetigo (in two patients), nausea or vomiting (in one), gastroenteritis (in three), and convulsions (in one), and in the malathion group, rash or urticaria (in three patients) and gastroenteritis (in two).

§ Treatment-related adverse events were those classified as possibly, probably, or definitely related to the study drug by the investigator.

¶ Severe adverse events were adverse events classified by the investigator as being severe, using a scale of mild, moderate, or severe (see the Supplementary Appendix). These included the convulsions in one patient in the ivermectin group and headache in two patients in the malathion group.

Chosidow O et al. N Engl J Med 2010;362:896-905

The NEW ENGLAND JOURNAL of MEDICINE

Original Article

Topical 0.5% Ivermectin Lotion for Treatment of Head Lice

David M. Pariser, M.D., Terri Lynn Meinking, Ph.D., Margie Bell, M.S., and William G. Ryan, B.V.Sc.

N Engl J Med
Volume 367(18):1687-1693
November 1, 2012

The NEW ENGLAND JOURNAL of MEDICINE

Study Overview

- New treatments for head lice are needed.
- In this pair of randomized, controlled trials involving 765 patients, a single application of topical ivermectin had an efficacy of 94.9% on day 2 and 73.8% on day 15.

The NEW ENGLAND JOURNAL of MEDICINE

Table 2. Adverse Events with an Incidence of More Than 1% in Either Group (Safety Population of Combined Studies).

Event	Ivermectin (N=379)	Vehicle Control (N=401)
	number of patients (percent)	
Pruritus	3 (0.8)	6 (1.5)
Excoriation	1 (0.3)	5 (1.2)
Erythema	2 (0.5)	5 (1.2)

Conclusions

- A single, 10-minute, at-home application of ivermectin was more effective than vehicle control in eliminating head-louse infestations at 1, 7, and 14 days after treatment.

The NEW ENGLAND JOURNAL of MEDICINE

Ivermectine locale en dermatologie:

Un sujet d'inquiétude !

The Medical Letter

Objective Drug Reviews Since 1959

The Medical Letter on Drugs and Therapeutics

FROM ISSUE 1466

April 13, 2015

Ivermectin Cream (Soolantra) for Rosacea

The full article is available to subscribers Subscriber Login

The FDA has approved a 1% cream formulation of the antiparasitic drug ivermectin (*Soolantra*, Galderma) for topical treatment of inflammatory l
tablets (*Stromectol*, and generics) for treatment
0.5% lotion *(Sklice)* for treatment of head lice.

The NEW ENGLAND JOURNAL of MEDICINE

Topical 0.5% Ivermectin Lotion for Treatment of Head Lice

David M. Pariser, M.D., Terri Lynn Meinking, Ph.D., Margie Bell, M.S., and William G. Ryan, B.V.Sc.

NOVEMBER 1, 2012 VOL. 367 NO. 18

The NEW ENGLAND JOURNAL of MEDICINE

The NEW ENGLAND JOURNAL of MEDICINE

EDITORIAL

Topical Ivermectin — A Step toward Making Head Lice Dead Lice?

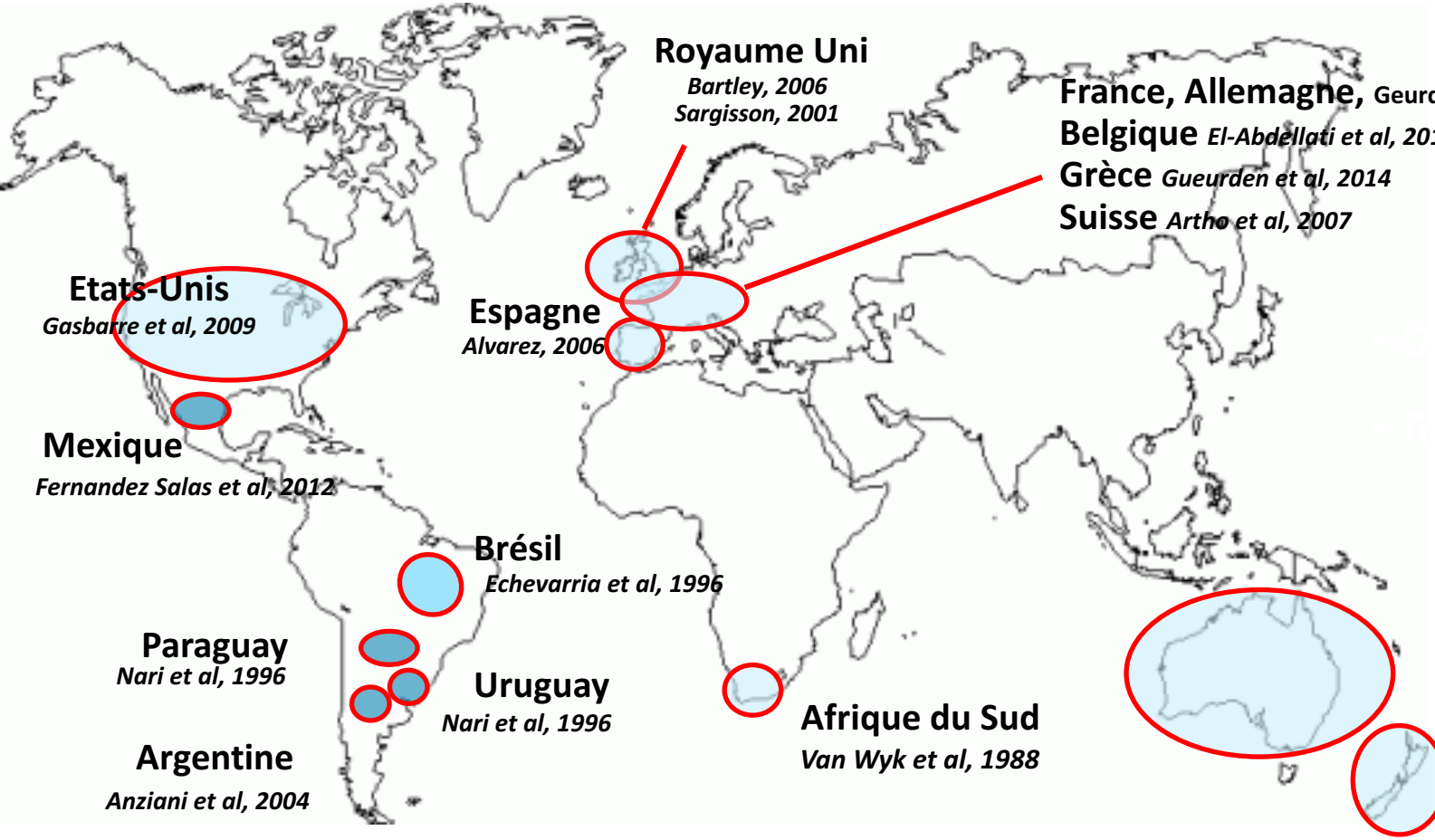
Olivier Chosidow, M.D., Ph.D., and Bruno Giraudeau, Ph.D.

N ENGL J MED 367;18 NEJM.ORG NOVEMBER 1, 2012

The NEW ENGLAND JOURNAL of MEDICINE

Résistance à l'ivermectine

(A. Lespine, DR INRA, communication personnelle)



Head lice probably resistant to ivermectin recovered from two rural girls in Dielmo, a village in Sine-Saloum, Senegal

G. DIATTA, C. ABAT, C. SOKHNA, H. TISSOT-DUPONT, J.-M. ROLAIN, D. RAOULT

Table 1
Impact of 24 h of oral ivermectin treatment on head lice carried on eight different females in Dielmo, Sine-Saloum, Senegal, 28 November 2015.

Person treated	Age (years)	Weight (kg)	Result after May–June 2014 ivermectin treatment	Live head lice before ivermectin treatment	Ivermectin dose[a]	Live head lice 24 h after ivermectin treatment
Female 1	55	72	No head lice	+	8 pills	–
Female 2	10	29	Re-infestation	+	4 pills	+
Female 3	6	19	No head lice	+	2 pills	–
Female 4	15	56	Re-infestation	+	6 pills	–
Female 5	5	19	Suspicion of resistance	+	2 pills	+
Female 6	5	19	Suspicion of resistance	+	2 pills	–
Female 7	9	32	Re-infestation	+	4 pills	–
Female 8	10	22	Suspicion of resistance	+	2 pills	–

+, presence of head lice; –, no head lice.
[a] Ivermectin treatment dose defined using a standard dose of 400 µg of ivermectin per kg of body weight (each pill contained 3 mg of ivermectin).

http://dx.doi.org/10.1016/j.ijantimicag.2016.03.013

International Journal of Antimicrobial Agents

ORIGINAL ARTICLE

Designing Randomized-Controlled Trials to Improve Head-Louse Treatment: Systematic Review Using a Vignette-Based Method

Giao Do-Pham[1,2], Laurence Le Cleach[1], Bruno Giraudeau[2,3], Annabel Maruani[4], Olivier Chosidow[1,5,6,7] and Philippe Ravaud[2,8,9,10,11]

Head-louse infestation remains a public health problem. Despite published randomized-controlled trials, no consensus-based clinical practice guidelines for its management emerged because of the heterogeneity of trial methodologies. Our study was undertaken to attempt to find an optimal trial framework: minimizing the risk of bias, while taking feasibility into account. To do so, we used the vignette-based method. A systematic review first identified trials on head-louse infestation; 49 were selected and their methodological constraints assessed. Methodological features were extracted and combined by arborescence to generate a broad spectrum of potential designs, called vignettes, yielding 357 vignettes. A panel of 48 experts then rated one-on-one comparisons of those vignettes to obtain a ranking of the designs. Methodological items retained for vignette generation were income level of the population, types of treatments compared, randomization unit, blinding, treatment-administration site, diagnosis method and criteria, and primary outcome measure. The expert panel selected vignettes with cluster randomization, centralized treatment administration, and blinding of the outcome assessor. The vignette method identified optimal designs to standardize future head-louse treatment trials, thereby obtaining valid conclusions and comparable data from future trials, and appears to be a reliable way to generate evidence-based guidelines.

Journal of Investigative Dermatology (2014) **134,** 628–634;
doi:10.1038/jid.2013.414; published online 14 November 2013

JOURNAL OF INVESTIGATIVE DERMATOLOGY

RESULTS

- **High ranked vignettes**

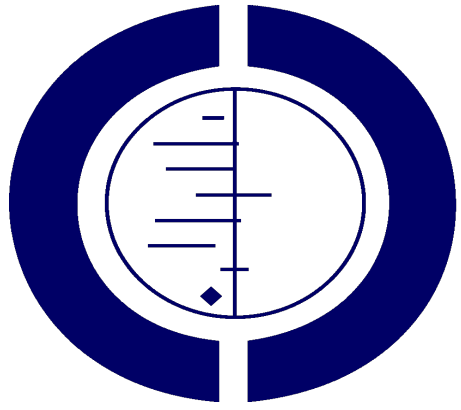
Randomization	**Cluster (infectious condition ++)**
Diagnosis	**One live louse by combing**
Blinding	**Outcome assessor (feasibility of blinding of patient and care provider)**
Primary Outcome	**Absence of lice at D14 (cycle of parasite life)**

CONCLUSION

- **Method of case-vignettes**
  - **International expertise**
  - **Promotion of relevant designs with balance between internal validity and feasibility**

→ attractive approach to provide reliable RCTs results

→ development of evidence-based clinical practice guidelines



Interventions for treating head lice (soumis)

Giao Do-Pham, Tim Klootwijk, Robert Vander Stichele, Johannes C van der Wouden, Olivier Chosidow, Laurence Le Cleach

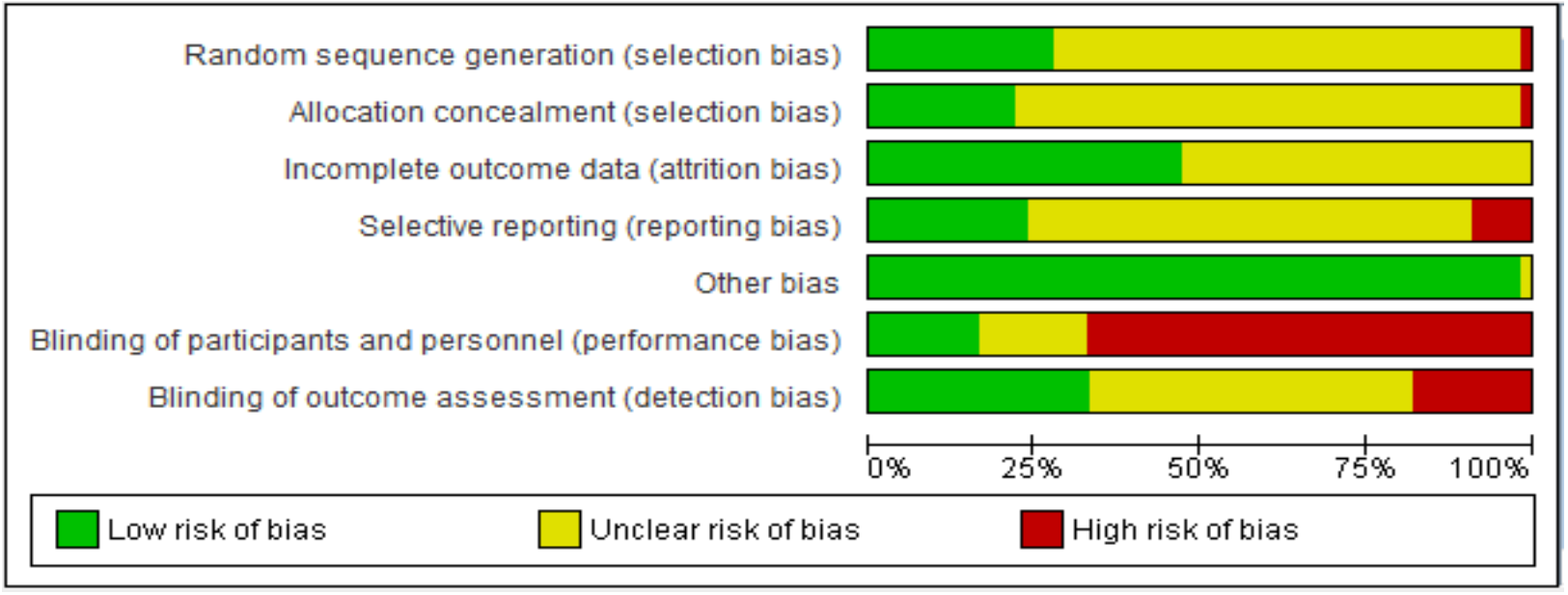
Methods

- Systematic research of randomized controlled trials (RCTs) in head lice treatment
- Published RCTs (electronic databases)
- Unpublished RCTs = grey literature (congresses, FDA, pharmaceutical companies, authors' contacts…)

- Double selection and extraction
  - Results
  - Risks of bias

Results

- **669 results from the search/ 55 studies included**



- **High or unclear risks of bias (blinding ++)**

Results

- Many different treatments (22) with high heterogeneity between RCTs
- High quality of evidence for efficacy of neurotoxic approach with permethrin and malathion
- New alternatives but with low evidence: dimeticone, bug busting
- Emergence of resistance ++: place of oral ivermectine
- Rare serious adverse events

- Need of standardization of RCTs ++: active control, blinding of outcome assessor

Informations essentielles

- **Données combinées**
  - malathion > pyréthrine + butoxyde de piperonyl (2 ECRs*)
  - perméthrine > pyréthrine + butoxyde de piperonyl (2 ECRs*)
  - ECRs* avec risques de biais élevés

- **Méthodologie**
  - homogénéisation de la méthodologie
  - randomisation en clusters, contrôle actif *vs.* placebo

- **Conclusions**
  - difficilement interprétables car biais potentiels
  - applicabilité en fonction prévalence et ressources
  - en France : malathion ou perméthrine 1ère intention
  - potentiel IVM systémique/topique

*ECR = Essai Contrôlé Randomisé

Head Lice

Cynthia D. Devore, MD, FAAP, Gordon E. Schutze, MD, FAAP, THE COUNCIL ON SCHOOL HEALTH AND COMMITTEE ON INFECTIOUS DISEASES

Head lice (*Pediculus humanus capitis*) have been companions of the human species since antiquity. Anecdotal reports from the 1990s estimated annual direct and indirect costs totaling $367 million, including remedies and other consumer costs, lost wages, and school system expenses. More recently, treatment costs have been estimated at $1 billion.[1] It is important to note that head lice are not a health hazard or a sign of poor hygiene and are not responsible for the spread of any disease. Despite this knowledge, there is significant stigma resulting from head lice infestations in many developed countries, resulting in children being ostracized from their schools, friends, and other social events.[2,3]

In the past, parents and other non–health care personnel made the diagnosis of head lice, and the easy availability of safe and effective over-the-counter (OTC) pediculicides often removed the physician from the treatment process. However, the potential for misdiagnosis and the resulting improper use of pediculicides and the emergence of resistance to both available and newer products, many without proof of efficacy or safety, call for increased physician involvement in the diagnosis and treatment.[4,5] Optimal treatments should be safe, should rapidly rid the individual of live lice, viable eggs, and residual nits, and should be easy to use and affordable.[6] Additionally, because lice infestation is benign, treatments should not be associated with adverse effects and should be reserved for patients on whom living lice are found.

From The Medical Letter on Drugs and Therapeutics

Drugs for Head Lice

Box. Recommendations

Treatment

- Patients with live lice should be treated.
- Permethrin 1% and pyrethrins are available OTC and are inexpensive, but resistance is widespread.
- FDA-approved topical formulations of benzyl alcohol, malathion, spinosad, and ivermectin are preferred.
- Retreatment may be necessary because none of the available products are 100% ovicidal (eggs usually hatch in 8-9 days [range 7-12 days]).

Prevention of Transmission

- Items that have been in contact with the head of a louse-infested person within 24 to 48 hours should be cleaned (lice that are not on the scalp generally survive for ≤24 hours).
- Clothing and bed linens should be washed in hot water (>130°F) and then dried for at least 10 minutes at the hottest setting.
- Items that cannot be washed can be sealed in a plastic bag for 48 hours.

Pédiculose corporelle

- **Décontamination literie et vêtements: suffisant en général**
- **Poudre insecticide si épidémie**
- **Antibiotiques si maladies satellites**
  ---> 1 dose unique de 200 mg de doxycycline a permis de contrôler l'épidémie au Burundi
- **SDF: intérêt des vêtements imprégnés de perméthrine (J14, pas J45) mais augmentation résistance kdr**

Benkouiten S et al. JAMA Dermatol 2014

Effect of Permethrin-Impregnated Underwear on Body Lice in Sheltered Homeless Persons
A Randomized Controlled Trial

Samir Benkouiten, MPH; Rezak Drali, MSc; Sékéné Badiaga, MD, PhD; Aurélie Veracx, PhD; Roch Giorgi, MD, PhD; Didier Raoult, MD, PhD; Philippe Brouqui, MD, PhD

IMPORTANCE The control of body lice in homeless persons remains a challenge.

OBJECTIVE To determine whether the use of long-lasting insecticide-treated underwear provides effective long-term protection against body lice in homeless persons.

DESIGN, SETTING, AND PARTICIPANTS A randomized, double-blind, placebo-controlled trial was conducted in February and December 2011 in 2 homeless shelters (Madrague Ville and Forbin) in Marseille, France. Of the 125 homeless persons screened for eligibility, 73 body lice–infested homeless persons, 18 years or older, were enrolled.

INTERVENTIONS Body lice–infested homeless persons were randomly assigned to receive 0.4% permethrin–impregnated underwear or an identical-appearing placebo for 45 days, in a 1:1 ratio, with a permuted block size of 10. Visits were scheduled at days 14 and 45. Data regarding the presence or absence of live body lice were collected.

MAIN OUTCOMES AND MEASURES The primary and secondary end points were the proportions of homeless persons free of body lice on days 14 and 45, respectively. Mutations associated with permethrin resistance in the body lice were also identified.

RESULTS Significantly more homeless persons receiving permethrin-impregnated underwear than homeless persons receiving the placebo were free of body lice on day 14 in the intent-to-treat population (28% vs 9%; $P = .04$), with a between-group difference of 18.4 percentage points (95% CI, 1.4-35.4), and in the per-protocol population (34% vs 11%; $P = .03$), with a between-group difference of 23.7 percentage points (95% CI, 3.6-43.7). This difference was not sustained on day 45. At baseline, the prevalence of the permethrin-resistant haplotype was 51% in the permethrin group and 44% in the placebo group. On day 45, the permethrin-resistant haplotype was significantly more frequent in the permethrin group than in the placebo group (73% vs 45%, $P < .001$).

CONCLUSION AND RELEVANCE Permethrin–impregnated underwear is more efficient than placebo at eliminating body louse infestations by day 14; however, this difference was not sustained on day 45. The use of permethrin may have increased the resistance to permethrin in body lice and thus must be avoided.

JAMA Dermatol. 2014;150(3):273-279. doi:10.1001/jamadermatol.2013.6398
Published online December 4, 2013.

JAMA Dermatology

Pédiculose pubienne

- **Ne pas hésiter à traiter la totalité des zones pileuses : perméthrine 5 %, malathion, rasage**
- **Cils : intérêt de la perméthrine à 1%, ivermectine ? Albendazole ?**

Savalastru CM, Chosidow O, et al. European guideline for the management of pediculosis pubis. JEADV 2017

Conclusions

- « Fardeau » de la gale dont impétigo et complications, gales profuse et hyperkératosique
- Ivermectine : innovation thérapeutique mais modalités à préciser
- Maladies infectieuses transmises par les poux de corps (poux de tête ?)
- Résistance des poux de tête : médicalisation nécessaire, IVM en dernière ligne


Innovation :
UNE PILULE CONTRE LES POUX.
C'EST PLUS SEYANT QUE LE PRÉSERVATIF
TIGNOUS

Acknowledgements

Société Française de Dermatologie

EnvA École nationale vétérinaire d'Alfort

Dynamyc

Crbm Centre de recherche biomédicale École nationale vétérinaire d'Alfort

UPEC Université Paris-Est Créteil Val de Marne

Charlotte Bernigaud, Jacques Guillot, Fang Fang, Françoise Botterel, Françoise Foulet, Thomas Lilin, Francis Moreau

QIMR Berghofer Medical Research Institute

University of the Sunshine Coast

The University Of Queensland Australia

Katja Fischer, Beverley Hutchinson, Andrew Kelly, James Mc Carthy, Kate Mounsey, Pearl Swe

INRA

Toxalim Research Center in Food Toxicology

Anne Lespine, Jean-François Sutra

MERIT

Valérie Andriantsoanirina, Arezki Izri, Rémy Durand

samusocialdeParis

Amandine Arnaud, Dounia Bitar, Marc-Antoine Detrez, Françoise Foulet, Yann Le Strat, Stéphanie Vandentorren

IACS International Alliance for the Control of Scabies

Daniel Engelman, Claire Fuller, Rod Hay, Patrick Lammie, Diana Martin, Lucia Romani, Andrew Steer, Margot Whitfeld

Parasitologists
ID specialists

Pascal Delaunay, Philippe Brouqui, Herman Feldmeier, Arnaud Fontanet, Kim Larsen

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Dermatologists

Majda Askour, Sophie Bouvresse, Christel Buzenet, Laure Dehen, Bruno Labeille, Giuseppe Micali, Gentiane Monsel, Jean-Luc Perrot