

## GUIDELINES

**European guideline for the management of pediculosis pubis**C.M. Salavastru,<sup>1,\*</sup> O. Chosidow,<sup>2</sup> M. Janier,<sup>3</sup> G.S. Tiplica<sup>4</sup><sup>1</sup>Department of Paediatric Dermatology, Colentina Clinical Hospital, "Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania<sup>2</sup>Department of Dermatology, Hôpital Henri Mondor AP-HP, Créteil, France<sup>3</sup>STD Clinic, Dermatology Department, Hôpital Saint-Joseph, Paris, France<sup>4</sup>Department of Dermatology II, Colentina Clinical Hospital, "Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania

\*Correspondence: C.M. Salavastru. E-mail: galati1968@yahoo.com

**Abstract**

Pediculosis pubis is caused by *Phthirus pubis*. The disease can be sexually transmitted. Patients main complain is of itch in the pubic area. The parasite can be spotted with the naked eye and blue macules can be observed in the pubic area. First line therapy consists of permethrin or pyrethrins with piperonyl butoxide. Second line therapy contains phenothrin, malathion and oral ivermectin. Partner management needs a look-back period of time of 3 months. Pubic lice incidence is increased in populations groups living in crowded spaces with scarce sanitary conditions as in time of war or disaster.

Received: 13 March 2017; Accepted: 6 June 2017

**Conflicts of interest**

The authors declare no financial support from any organization for the submitted work. Carmen Maria Salavastru received travel grant from Abbvie. During 2012–2016, Olivier Chosidow has received research grants and honorariums from MSD France, Sanofi (USA), KCL, Codexial. George-Sorin Tiplica received honorariums from Alfa Wassermann, Pierre Fabre and Novartis Pharma Services.

**Funding sources**

None declared.

**Guideline development**

This guideline has been updated by reviewing the existing guidelines including European Guideline for the Management of Pediculosis pubis (2010),<sup>1</sup> CDC guideline (2011),<sup>2</sup>

BASHH guideline (2007).<sup>3</sup> A comprehensive literature search of publications from 2010 to April 2016 was also conducted (Annexure 1. Search strategy).

**New information in this guideline since 2010 edition**

- New treatment recommendations
- Changes in Partner management
- Audit standards added.

**Epidemiology**

Pediculosis pubis (*sin.* crab louse) is an infectious disease caused by the infestation with the parasite *Phthirus pubis*. The infection is transmitted by sexual contact, close body contact or, less commonly, by contact with objects (e.g. clothing, towels). *Phthirus pubis* infests the terminal hairs of the pubic and perianal areas. The parasite is not adapted for crawling but can be found of the

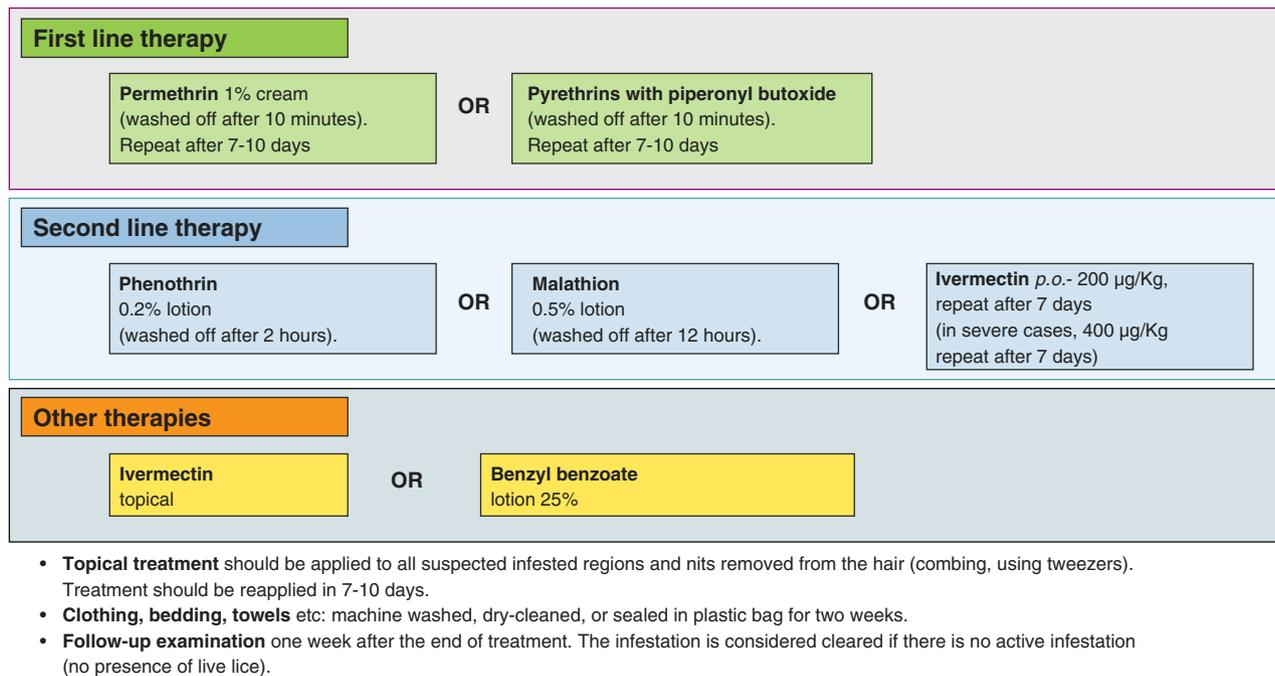
hairs of the legs, forearms, chest or face (including the eyelashes). The lifetime of the adult parasite is <1 month during which the female parasite lays eggs that need 1 week to hatch.<sup>4</sup> The incubation period is usually <1 week (but in certain cases can be longer<sup>3</sup>). The adult parasite is not able to survive more than 24 h without blood feeding.<sup>5</sup>

**Clinical features**

Patients' main complaint is of itch in the pubic area. Nits and/or lice attached to hairs are visible with the naked eye or using a dermatoscope. Light blue macules ('maculae cerulae') <1 cm or red papules can be seen at the site of bites. The affected skin area can contain crusts and rust-coloured flecks of faecal material.<sup>6</sup> Adult lice infest the terminal hair of the genital area and can also be present on the body hair, facial terminal hair including the eyebrows and eyelashes (typical for children). Small blood stains can be observed on the underwear.

**Diagnosis**

Diagnosis is usually based on the typical clinical findings. The dermoscopic examination clearly exposes the nits/parasites if the diagnosis is not certain.



**Figure 1** Pediculosis pubis: general principles of treatment

Screening for other STI (including HIV) is strongly recommended in patients with pediculosis pubis as concomitant STIs are present in 30% of infested individuals.<sup>7</sup>

### General principles of treatment

There are few quality data comparing the available treatments of pediculosis pubis (Fig. 1). Recent data are oriented for the treatment of pediculosis capitis, making difficult to extrapolate the results to pediculosis pubis.<sup>8-10</sup>

Throughout European countries, there are numerous differences in the availability of certain pediculicide drugs on the market. In some East European countries, magistral formulations (made up locally) are in use (e.g. benzyl benzoate lotion 25%; lindane 1%).

The topical treatment is applied to all suspected infested regions: genital and anal areas, thighs, trunk, axillae, moustache and beard areas.<sup>1</sup>

To minimize percutaneous absorption, the skin must be cool and dry.<sup>12</sup>

The nits must be removed from the hair (e.g. by combing, using fine tweezers).

Clothing, bedding, towels and other items should be machine washed (at 50°C or higher) or dry-cleaned or sealed and stored in a plastic bag for 3 days.<sup>3,13</sup> When starting the treatment, patients should wear clean underwear and clothing.<sup>2</sup>

Shaving the pubic area is not necessary.<sup>14</sup> In the general population, it is reported that the incidence of pubic lice is decreasing with the increase in pubic hair removal habit due to the destruction of the natural habitat of the parasite.<sup>15</sup>

Topical medication must be applied as mentioned in the drug package insert leaflet or as indicated on the medication box. Insufficient application of the insecticide or poor compliance is frequent cause for treatment failure.<sup>16</sup> Resistance to topical and systemic pediculicide treatment has been reported. If the infestation persists, a different class of pediculicide should be applied.<sup>17</sup>

Patients should be given a detailed explanation of their infestation together with clear written information {level of evidence IV; grade C recommendation}.<sup>1</sup>

Persistent infestation is found in 40% of the patients 10 days after treatment and nit combing.<sup>18</sup>

Reapply treatment systematically in 7-10 days (to kill adult lice from eggs existing at the initial treatment) {level of evidence IIa; grade B recommendation}.<sup>1,18</sup>

The infestation is considered cleared if 1 week after the end of treatment the follow-up examination shows no active infestation (presence of live lice).

### First-line therapy

- Permethrin 1% cream applied to the affected areas and washed off after 10 min. {evidence Ib; grade A recommendation}.<sup>19</sup>

- Pyrethrins with piperonyl butoxide applied to the affected areas and washed off after 10 min {evidence Ib; grade A recommendation}.<sup>20</sup>

### Second-line therapy

- Phenothrin 0.2% lotion on dry hair, wash out after 2 h {level of evidence Ib; grade A recommendation}.<sup>21</sup>
- Malathion 0.5% lotion on dry hair, wash out 12 h after application (level of evidence IV; grade C recommendation). Instruct patient to avoid heat exposure (including electric hair dryer) as malathion products are potentially flammable {level of evidence Ib; grade A}.<sup>22</sup>
- Ivermectin was reported as efficient but different dosages are used. In a series of pediculus pubis cases, the dosage used was 250 µg/kg orally, repeated after 1 week {level of evidence IV; grade C}.<sup>23</sup> A randomized clinical trial demonstrated that in difficult-to-treat head lice the effective dosage of Ivermectin was 400 µg/kg orally, repeated after 1 week.<sup>24</sup> Ivermectin should not be used in children weighing <15 kg.<sup>25</sup>

### Other therapies

- Ivermectin topical was reported as effective and generally well-tolerated for pediculosis pubis {level of evidence IV; grade C recommendation}.<sup>26,27</sup>
- Benzyl benzoate lotion 25% {level of evidence IV; grade C recommendation}.<sup>28</sup>
- Lindane licence was withdrawn by the European Medicines Agency in 2008.<sup>29</sup> In some non-EU countries lindane shampoo 1% is used in the treatment of pediculosis pubis {level of evidence IIa; grade B recommendation}.<sup>18</sup> Lindane should not be applied a second time and should not be used in pregnant or lactating women or in children.<sup>30</sup>
- Spinosad recommended for pediculosis capitis was not yet evaluated for the treatment of pediculosis pubis.<sup>31</sup>
- Carbaryl is carcinogenic and is no longer available.<sup>1</sup>

### Special situations

#### Pregnancy/lactation

Permethrin is safe in pregnancy {level of evidence III; grade B recommendation}.<sup>1,32</sup>

#### Lice in the eyelashes

- Inert ophthalmic ointment with paraffin or yellow mercuric oxide applied as eye patch twice daily for 8–10 days is effective by suffocating the parasites {level of evidence IV; grade C recommendation}.<sup>27,33</sup> Dead lice and nits can be removed with tweezers or fingernails.
- Ivermectin oral 200 µg/kg as two doses 1 week apart {level of evidence IV; grade C recommendation}.<sup>34</sup>
- Permethrin 1% lotion applied to the eyelashes and washed off after 10 min {level of evidence IV; grade C recommendation}.<sup>35</sup>

There are no specific recommendations for *solid-organ transplant patients* or for *HIV patients*.<sup>2</sup>

### Follow-up

A follow-up visit 1 week after the treatment end will verify its efficacy searching for lice or nits {level of evidence IIa; grade B recommendation}.<sup>1,18</sup> Patients will be instructed to remove the dead nits adherent to the hairs.<sup>1</sup>

### Partner management

The infested patient and their sexual contact(s) should avoid close contact and sexual contact until all contacts are cleared of infestation. Partner management for pediculosis pubis is required with a look-back period of time of 3 months.<sup>36</sup>

Epidemiological treatment is recommended {level of evidence IV; grade C recommendation}.<sup>37</sup>

The presence of pubic lice in children is not necessarily and indicator of sexual abuse or sexual activity as they can be transmitted by non-genital bodily contact between close living companions.

Human lice can be used as a forensic tool. A mixed DNA profile of two hosts can be detectable in blood meals of the lice that have had close contact between an assailant and a victim.<sup>38</sup>

### Prevention/health promotion

Patients with pediculosis pubis should not share their clothes, bedding and personal hygiene products. Transmission by sitting on toilet seats is not possible. The disease is not prevented by condom use. When dealing with populations groups living in crowded spaces as in time of war or disaster, a special attention should be shown to the sanitary conditions.

Patients with pediculosis pubis should be screened for other sexually transmitted diseases.

### Auditable outcome measures

- Patients with pediculosis pubis should be invited for follow-up visit: target 100%.
- Suspected cases of pediculosis pubis should be invited for screening: target 100%.
- Suspected cases of pediculosis pubis should have access to written information on the disease: target 100%.

### Acknowledgements

The authors thank Dr. Andy Winter (Glasgow, UK) for the comments that greatly improved the manuscript.

### References

- 1 Scott GR, Chosidow O, IUSTI/WHO. European guideline for the management of pediculosis pubis, 2010. *Int J STD AIDS* 2011; 22: 304–305.
- 2 CDC - Lice - Pubic “Crab” - Resources for Health Professionals. 2015. URL [http://www.cdc.gov/parasites/lice/pubic/health\\_professionals/index.html](http://www.cdc.gov/parasites/lice/pubic/health_professionals/index.html) (last accessed: 20 June 2016).
- 3 Scott G. United Kingdom National Guideline on the Management of Phthirus pubis infestation, 2007. URL [www.bashh.org/documents/28/28.pdf](http://www.bashh.org/documents/28/28.pdf) (last accessed: 20 June 2016).

- 4 Galiczynski EM Jr, Elston DM. What's eating you? Pubic lice (Pthirus pubis). *Cutis* 2008; **81**: 109.
- 5 Martin DH, Mroczkowski TF. Dermatologic manifestations of sexually transmitted diseases other than HIV. *Infect Dis Clin North Am* 1994; **8**: 533–582.
- 6 Brown TJ, Yen-Moore A, Tyring SK. An overview of sexually transmitted diseases. Part II. *J Am Acad Dermatol*. 1999; **41**(5 Pt 1): 661–677; quiz 678–80. Review. Erratum in: *J Am Acad Dermatol* 2000; **42**(1 Pt 1): 148.
- 7 Ko CJ, Elston DM. Pediculosis. *J Am Acad Dermatol* 2004; **50**: 1–12.
- 8 Meinking TL, Mertz-Rivera K, Villar ME, Bell M. Assessment of the safety and efficacy of three concentrations of topical ivermectin lotion as a treatment for head lice infestation. *Int J Dermatol* 2013; **52**: 106–112.
- 9 Rutman H. Ivermectin versus malathion for head lice. *N Engl J Med* 2010; **362**: 2426–2427.
- 10 Nofal A. Oral ivermectin for head lice: a comparison with 0.5% topical malathion lotion. *J Dtsch Dermatol Ges*. 2010; **8**: 985–988.
- 11 Early J, MacNaughton H. Ivermectin lotion (sklice) for head lice. *Am Fam Physician* 2014; **89**: 984–986.
- 12 Stone SP, Goldfarb JN, Baceliieri RE. Scabies, other mites, and pediculosis. In: Wolf K, Goldsmith LA, Katz SI et al., eds. Fitzpatrick's Dermatology in General Medicine, 7th edn. McGraw Hill, New York, 2008: p. 2029.
- 13 Pinckney J 2nd, Cole P, Vadapalli SP, Rosen T. Phthiriasis palpebrarum: a common culprit with uncommon presentation. *Dermatol Online J* 2008; **14**: 7.
- 14 Adler MW. ABC of sexually transmitted diseases. *Genital infestations*. *Br Med J (Clin Res Ed)* 1984; **288**: 311–313.
- 15 Dholakia S, Buckler J, Jeans JP, Pillai A, Eagles N, Dholakia S. Pubic lice: an endangered species? *Sex Transm Dis* 2014; **41**: 388–391.
- 16 Chosidow O. Scabies and pediculosis. *Lancet* 2000; **355**: 819–826.
- 17 Speare R, Koehler JM. A case of pubic lice resistant to pyrethrins. *Aust Fam Physician* 2001; **30**: 572–574.
- 18 Kalter DC, Sperber J, Rosen T, Matarasso S. Treatment of pediculosis pubis. Clinical comparison of efficacy and tolerance of 1% lindane shampoo vs 1% permethrin creme rinse. *Arch Dermatol* 1987; **123**: 1315.
- 19 Izri A, Chosidow O. Efficacy of machine laundering to eradicate head lice: recommendations to decontaminate washable clothes, linens, and fomites. *Clin Infect Dis* 2006; **42**: e9–e10.
- 20 Newsom JH, Fiore JL Jr, Hackett E. Treatment of infestation with Pthirus pubis: comparative efficacies of synergized pyrethrins and gamma-benzene hexachloride. *Sex Transm Dis* 1979; **6**: 203–205.
- 21 Burgess I, Brown C, Nair P. Comparison of phenothrin mousse, phenothrin lotion, and wet-combing for treatment of head louse infestation in the UK: a pragmatic randomised, controlled, assessor blind trial. *F1000Res* 2014; **3**: 158.
- 22 Greive KA, Lui AH, Barnes TM, Oppenheim VM. A randomized, assessor-blind, parallel-group, multicentre, phase IV comparative trial of a sufocant compared with malathion in the treatment of head lice in children. *Australas J Dermatol* 2010; **51**: 175–182.
- 23 Burkhart CG, Burkhart CN. Oral ivermectin for Pthirus pubis. *J Am Acad Dermatol* 2004; **51**: 1037. author reply 1037.
- 24 Chosidow O, Giraudeau B, Cottrell J et al. Oral ivermectin versus malathion lotion for difficult-to-treat head lice. *N Engl J Med* 2010; **362**: 896–905. Erratum in: *N Engl J Med* 2010; **362**: 1647.
- 25 Workowski KA, Bolan GA. Sexually transmitted diseases treatment guidelines, 2015. Centers for Disease Control and Prevention. *MMWR Recomm Rep* 2015; **64**: 1.
- 26 Pariser DM, Meinking TL, Bell M, Ryan WG. Topical 0.5% ivermectin lotion for treatment of head lice. *N Engl J Med* 2012; **367**: 1687–1693.
- 27 Do-Pham G, Monsel G, Chosidow O. Lice. *Semin Cutan Med Surg* 2014; **33**: 116–118.
- 28 WHO. Model prescribing information: Drugs Used in Skin Diseases, 1997. URL <http://apps.who.int/medicinedocs/en/d/Jh2918e/27.html> [last accessed: 31 May 2016].
- 29 Scott GR, Chosidow O; IUSTI/WHO. European guideline for the management of scabies, 2010. *Int J STD AIDS* 2011; **22**: 301–303.
- 30 FDA Medication Guides. Lindane shampoo. URL <http://www.fda.gov/Drugs/DrugSafety/ucm085729.htm> [last accessed: 31 May 2016]
- 31 Stough D. Efficacy and safety of spinosad cream rinse for head lice-reply. *Arch Dermatol* 2012; **148**: 1070.
- 32 Mytton OT, McGready R, Lee SJ et al. Safety of benzyl benzoate lotion and permethrin in pregnancy: a retrospective matched cohort study. *Br J Obstet Gynecol* 2007; **114**: 582–587.
- 33 Ashkenazi I, Desatnik HR, Abraham FA. Yellow mercuric oxide: a treatment of choice for phthiriasis palpebrarum. *Br J Ophthalmol* 1991; **75**: 356.
- 34 Burkhart CN, Burkhart CG. Oral ivermectin therapy for phthiriasis palpebrum. *Arch Ophthalmol* 2000; **118**: 134–135.
- 35 Klaus S, Shvil Y, Mumcuoglu KY. Generalized infestation of a 3 1/2-year-old girl with the pubic louse. *Pediatr Dermatol* 1994; **11**: 26.
- 36 Tiplica GS, Radcliffe K, Evans C et al. European guidelines for the management of partners of persons with sexually transmitted infections. *J Eur Acad Dermatol Venereol* 2015; **29**: 1251–1257.
- 37 McClean H, Radcliffe K, Sullivan A, Ahmed-Jushuf I. 2012 BASHH statement on partner notification for sexually transmissible infections. *Int J STD AIDS* 2013; **24**: 253–261.
- 38 Mumcuoglu KY, Gallili N, Reshef A, Brauner P, Grant H. Use of human lice in forensic entomology. *J Med Entomol* 2004; **41**: 803–806.

#### Composition of editorial board:

[www.iusti.org/regions/Europe/pdf/2013/Editorial\\_Board.pdf](http://www.iusti.org/regions/Europe/pdf/2013/Editorial_Board.pdf)

#### List of contributing organizations:

[www.iusti.org/regions/Europe/euroguidelines.htm](http://www.iusti.org/regions/Europe/euroguidelines.htm)

#### Tables of levels of evidence and grading of recommendations:

[www.iusti.org/regions/Europe/pdf/2013/Levels\\_of\\_Evidence.pdf](http://www.iusti.org/regions/Europe/pdf/2013/Levels_of_Evidence.pdf)

## Annexure 1

### Search strategy

### Resources

- PubMed (<http://www.ncbi.nlm.nih.gov/pubmed>)
- Biomedical Reference Collection (via EBSCO Host – <http://web.ebscohost.com/ehost/>)
- Medline (via EBSCO Host – <http://web.ebscohost.com/ehost/>)

### Keywords

|                      |          |                  |
|----------------------|----------|------------------|
| pediculosis pubis    | Combined | Clinical trial   |
| <i>Pthirus pubis</i> | with     | Diagnosis        |
| Pyrethrins           | AND      | Therapy          |
| Permethrin           | search   | Resistance       |
| Malathion            |          | Large population |
| Ivermectin           |          | Emigrants        |
| Spinosad             |          |                  |
| Lindane              |          |                  |

Searches were performed in January–May 2016.