TRAVEL CLINIC
DR. ISABELA STRACHINARU

18-10-2023

DEFENSIE
Medische Component

Infectiologie in het Militair Hospitaal

Infectiologie à l'Hôpital Militaire

Infectiologie – Travel Clinic

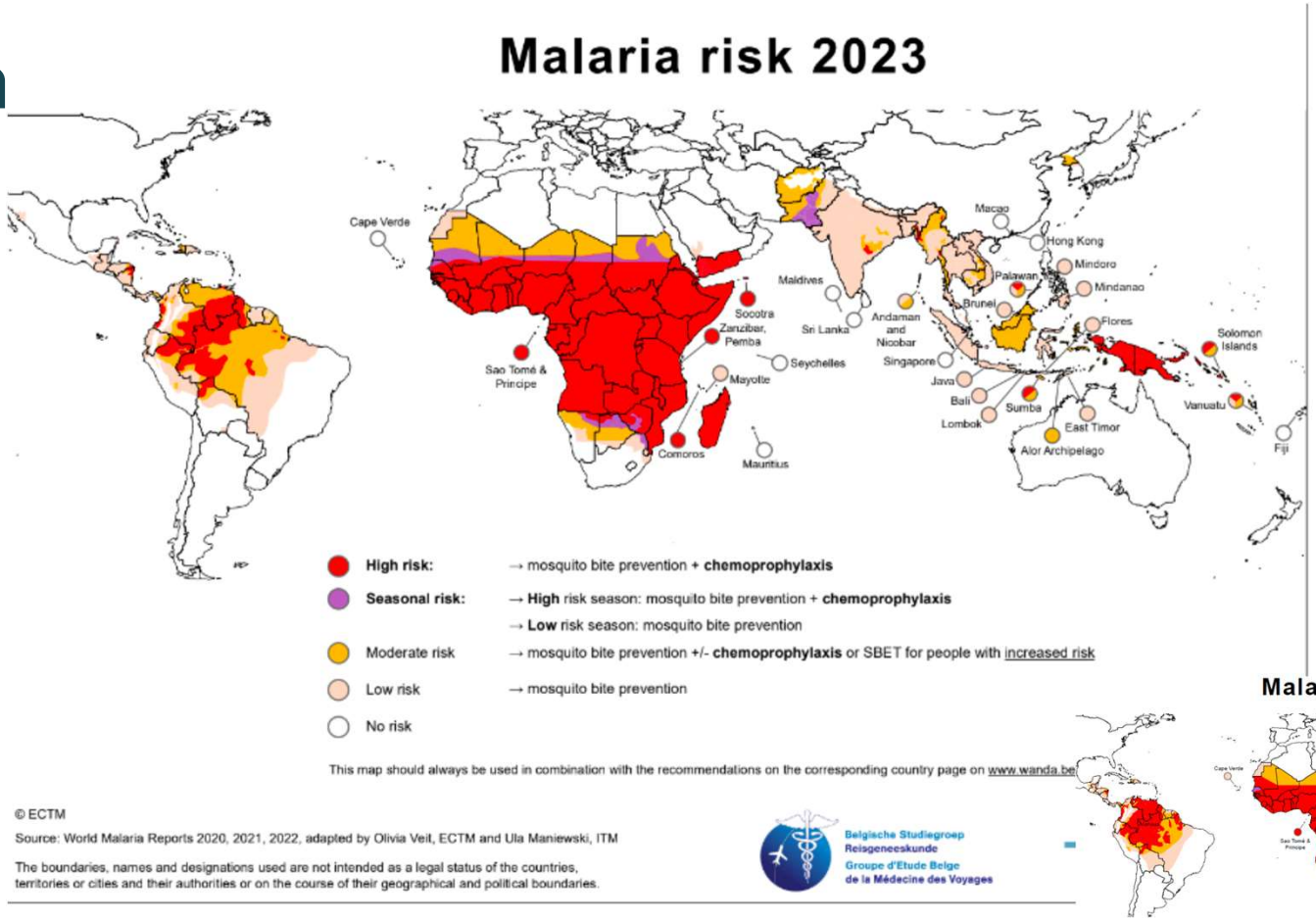
1. Vaccinaties : 8962 in 2022
2. Pre - en posttropen consultaties, algemene infectiologie consultaties, expertise : 654 in 2022
3. Consultaties, antibiotic stewardship in het brandwondencentrum : 273 in 2022
4. Faagtherapie
5. Opleiding, Studies, …

DEFENSIE
Medische Component

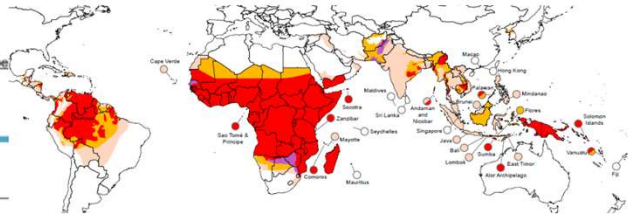
DEFENSIE
Medische Component

Pre- en posttropen

Malaria



Malaria risk 2022



DEFENSIE
Medische Component

Malaria

- Post Tropical Storm n = 515
- Post Kindu n= 404

- 2022 n=2.

Symptomen :

- ontstaan meestal **zeven dagen tot een maand na de besmetting**
- **soms** pas **enkele maanden tot meer dan een jaar erna**
- eerste dagen lijkt veel op griep :
  - **koorts**,
  - hoofdpijn,
  - spierpijn,
  - soms ook diarree of hoesten.

Diagnose : alleen door **bloedonderzoek!!!**

DEFENSIE
Medische Component

Malaria behandeling

- **Niet ernstige malaria tropica (P. falciparum):**
  1. artemether/ lumefantrine (Riamet ®, Co-artem ®): 4 tabletten op T= 0, 8, 24, 36, 48 en 60 uur
  2. atovaquone/ proguanil (Malarone ®): 1dd. 4 tabletten, 3 dagen

- **Ernstige malaria tropica (P. falciparum):**
  Zo spoedig mogelijk: artesunaat 2.4 mg/kg i.v., Op T= 0, 12, 24, 48, 72 uur;
  Zodra mogelijk switch orale therapie (altijd ook volledige orale kuur).

- **Malaria tertiana (P. vivax/ovale):**
  1. artemether/ lumefantrine (Riamet ®, tabletten à 20mg artemether en 120mg lumefantrine): 4 tabletten op T= 0, 8, 24, 36, 48 en 60 uur
  2. chloroquine po 10mg/kg 1dd 2 dagen gevolgd doorchloroquine po 5mg/kg eenmalig

  Altijd nabehandelen met primaquine tenzij contra-indicatie!
  →primaquine po 30mg 1dd 14 dagen (ZO-Azie: 21 dagen)

Post-tropen

ELSEVIER

Travel Medicine and Infectious Disease

Volume 39, January–February 2021, 101941

Original article

Screening the asymptomatic soldiers after a stay in sub-Saharan Africa. A retrospective observational study

Peter Vanbrabant [a b], Benjamin Damanet [a c], Chris Maussen [a], Marjan Van Esbroeck [d], Patrick Soentjens [a d]

Abstract

Background

Many tropical clinics offer post-travel screening for parasitic infections in asymptomatic travellers. However, literature on attack rates and incidence rates of parasitic infections is scarce.

Method

All military personnel returning from a tropical region during the year 2018 were tested for the presence of antibodies against Strongyloides stercoralis, Schistosoma and Entamoeba histolytica. Test results were compared with previous results if available to distinguish recent and old infection.

Results

In total, 949 soldiers were included in the study. The median age was years 31 (IQR: 26–41), 96.3% were male. The median duration of stay in the tropics was 35 days (IQR: 14–90). The destination was predominantly central Africa. Serological tests were positive for *S. stercoralis* in 10 patients (1.1%), *Schistosoma* in 3 (0.3%), and *E. histolytica* in 16 (1.7%). The attack rates were 0.84, 0.32 and 1.69 respectively. The incidence rates were 3.99, 1.49 and 7.97 respectively.

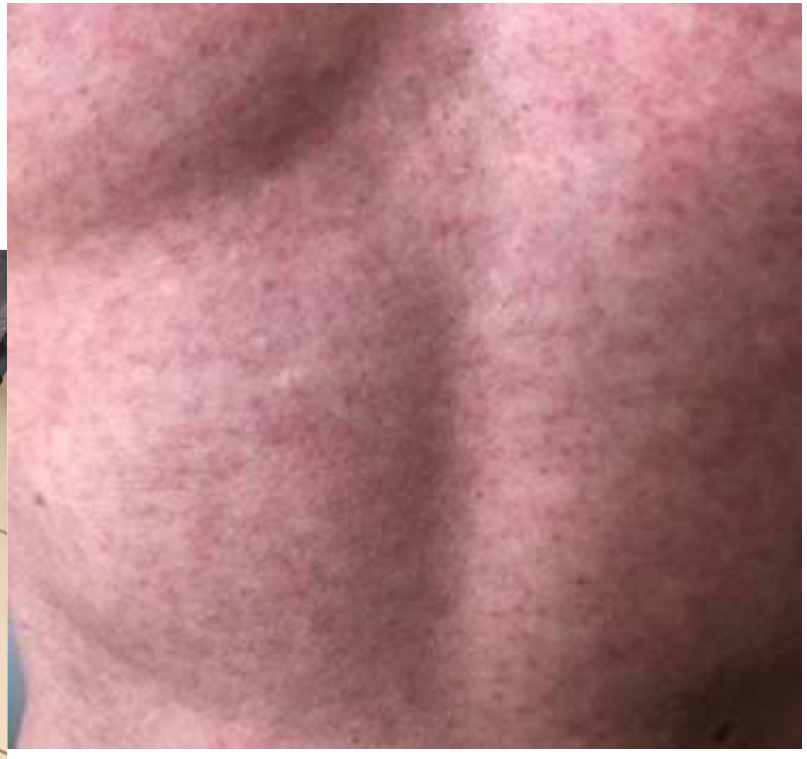
Conclusions

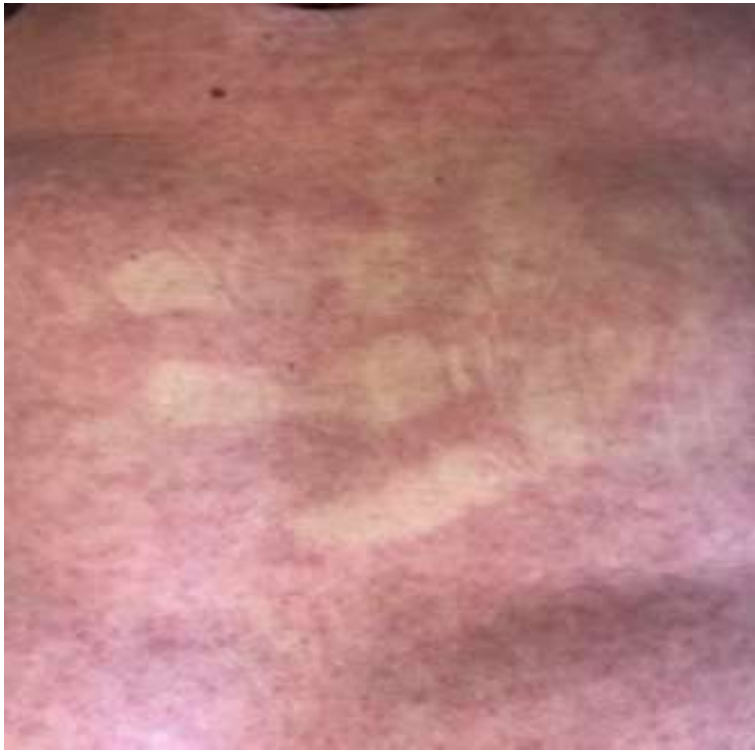
The risk for parasitic infection in the asymptomatic returning soldiers is low. However, the potentially serious complications of unrecognised parasitic infection can legitimise systematic screening.

DEFENSIE
Medische Component

Arbovirus infecties

Dengue
Chikungunya
Zika...





DEFENSIE
Medische Component

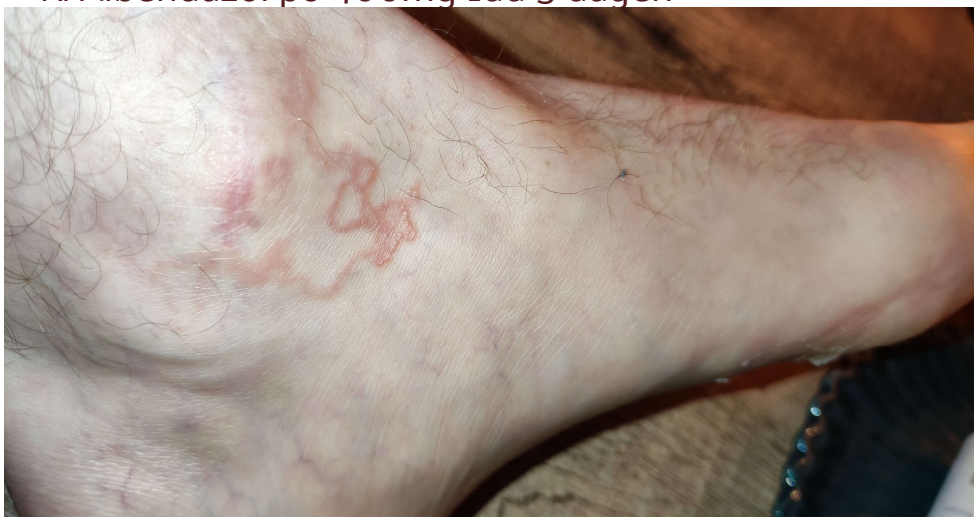
Larva migrans cutanea (Creeping eruption)

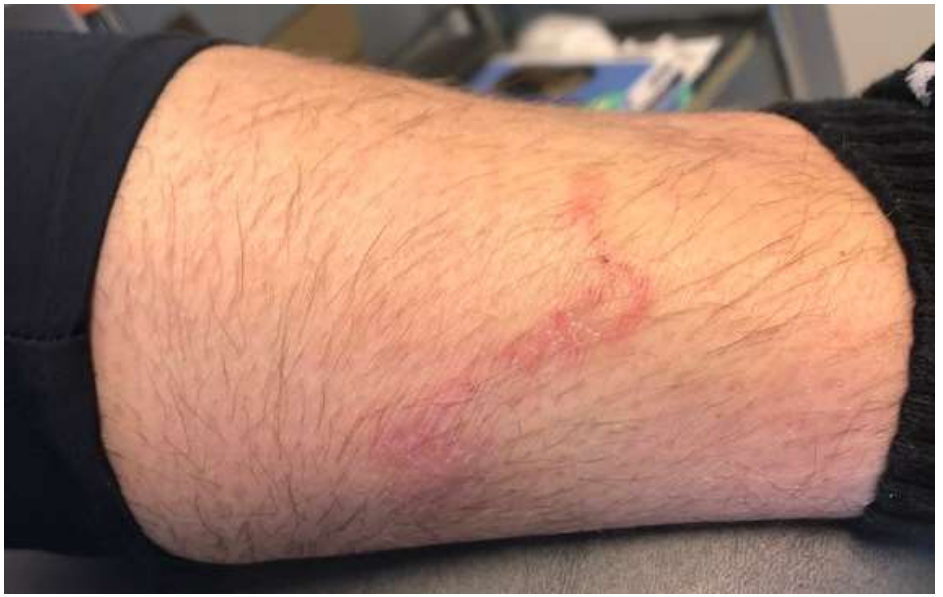
Veroorzaakt door een larve van een nematode

- meestal *Ancylostoma braziliensis*

De larve kruipt door de huid en laat een grillig spoor achter (creeping eruption).

R/ Ivermectine po 0.2mg/kg eenmalig op lege maag
Of
R/Albendazol po 400mg 1dd 5 dagen





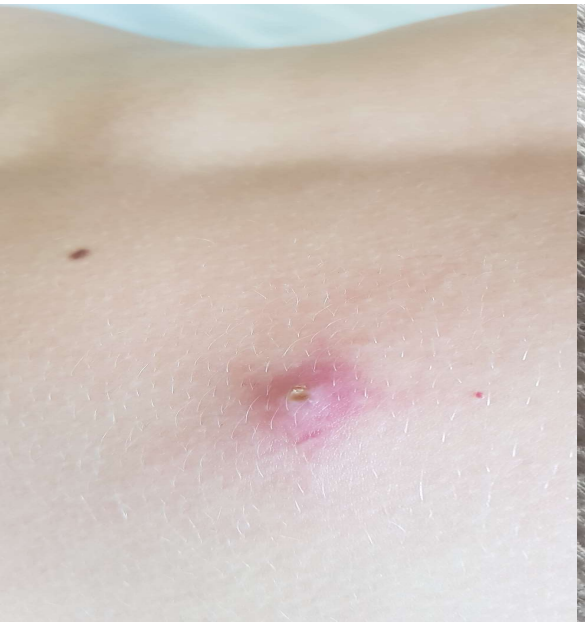
DEFENSIE
Medische Component

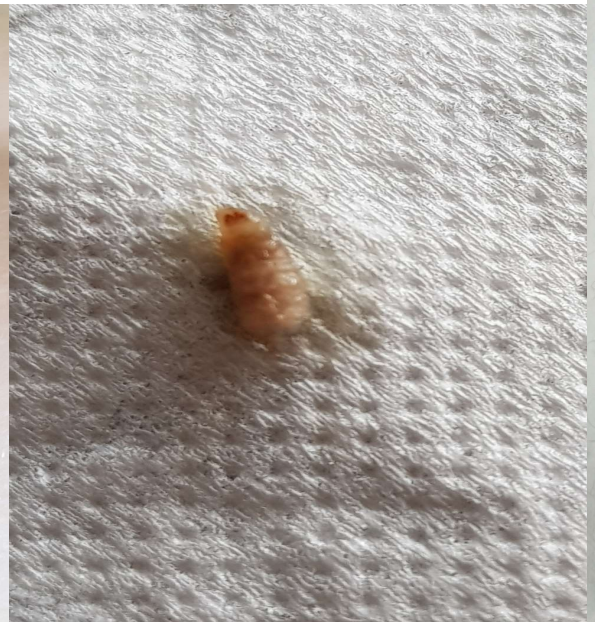
Myiasis (huidmadenziekte)

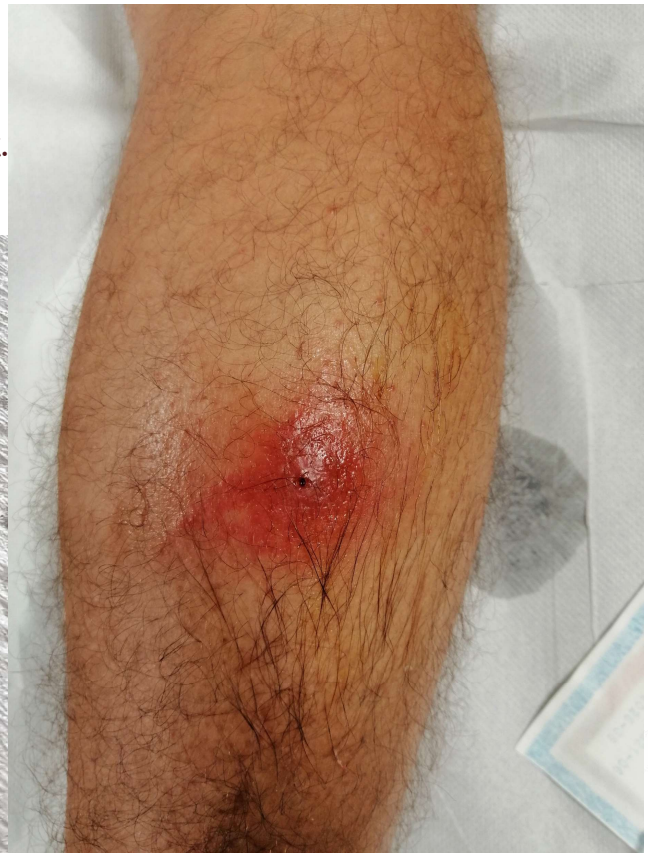
Larven van tweevleugeligen (Diptera) - vooral vliegen

- ook enkele muggen

De onderhuids groeiende vliegenlarven hebben zuurstof nodig via hun ademhalingsopening → dichtsmeren met vaseline →ze komen naar buiten →eventueel eruit trekken met een pincet.
Bij dode larve is chirurgische excisie noodzakelijk.

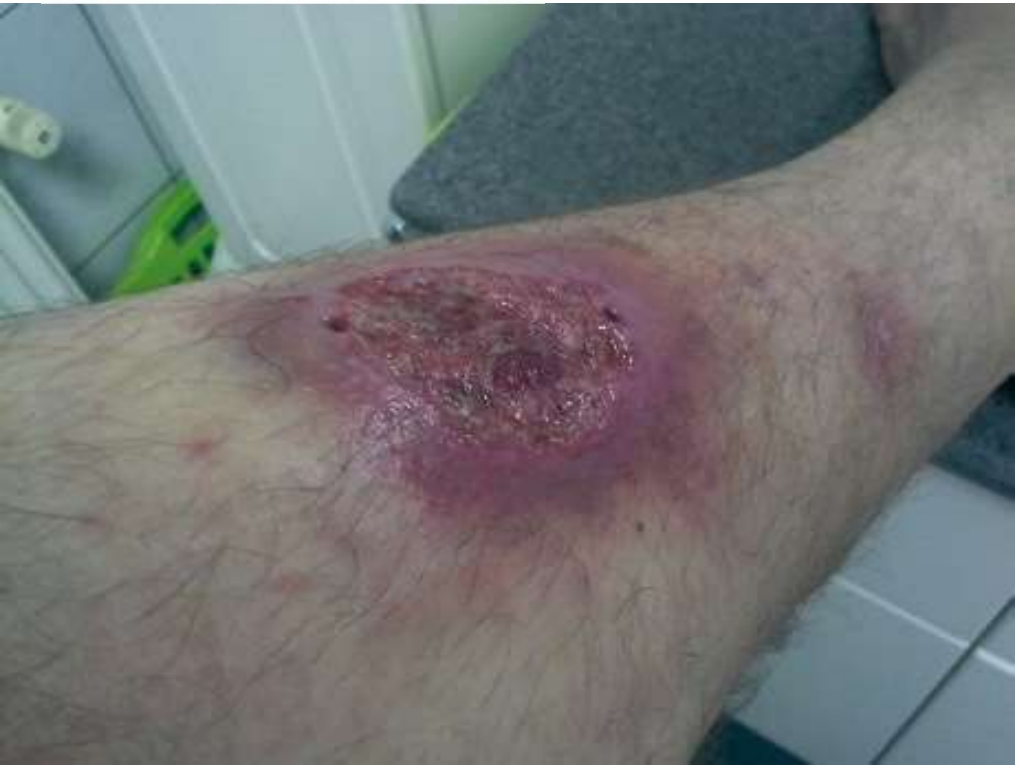






DEFENSIE
Medische Component

Leishmaniasis



The Netherlands Journal of Medicine

PHOTO QUIZ

Cutaneous ulcer after a stay in the tropics

P. Vanbrabant[1,2*], S. Van Den Broucke[3], P. Soentjens[1,3]

- Verschillende soorten Leishmania-parasieten
- Overgedragen via zandvliegbeten
  - Phlebotomus (Oude Wereld)
  - Lutzomyia (Nieuwe Wereld)
- Klinische presentatie:
    - Huidziekte
    - Slijmvliesziekte
    - Viscerale ziekte.
- Incubatietijd: weken tot maanden
- Diagnose :
    - microscopie
    - cultuur
    - PCR
- Behandeling: lokaal of systemisch

DEFENSIE
Medische Component

DEFENSIE
Medische Component

Infecties in brandwonden patients

Infecties in brandwonden patiënten

- Prevalentie van infecties onder slachtoffers van brandwonden:

  13% van de patiënten die tussen 2003 en 2012 in het ziekenhuis in de VS werden opgenomen

National Burn Repository.www.ameriburn.org/2013NBR AnnualReport

- 19% van de patiënten die in de zomer van 2006 in Franse brandwondencentra werden opgenomen

Ainaud P et al. Épidémiologie des centres de brûlés français en 2006. Société Française d'Études et de Traitement des brûlures, XX- VII Congrès, CL2, 2007.

- sepsis: verantwoordelijk voor 75% van de sterfgevallen bij brandwonden met TBSA > 40%

Atiyeh, B.S., et al.(2005) State of the Art in Burn Treatment. World Journal of Surgery, 29, 131-148.

- Geïnfecteerde brandwonden patiënten: sterftecijfer > 2x hoger dan dat van niet-geïnfecteerde

Alp E, Coruh A, Gunay GK, Yontar Y, Doganay M. Risk factors for nosocomial infection and mortality in burn patients: 10 years of experience at a university hospital. J Burn Care Res 2012; 33:379–85.

DEFENSIE
Medische Component

Infecties in brandwonden patiënten

- Velen zijn cutaan/hebben een cutane ingangspoort
- Zorggerelateerdeinfecties – vergelijkbaar met de andere ICU-patiënten:
  - Geïntubeerd, beademd, verdoofd → verlies van mucociliaire klaringsfunctie → VAP
    - meestal als gevolg van microaspiratie van pathogenen uit de orofaryngeale flora
  - Katheters (veneuze, arteriële) → infecties op katheters (CRBSI)
  - Blaassonde → Urineweginfecties op katheter :
    - meest voorkomende nosocomiale infectie,
    - meestal veroorzaakt door de commensale flora van de patiënt.
    - De belangrijkste risicofactor = duur van de aanwezigheid van de blaassonde.

Infecties in brandwonden patiënten

1. Bacteriële infecties:
    - Gevoelige bacteriën
    - Multiresistente bacteriën : **resistent voor meerdere antibioticaklassen**

2. Schimmelinfecties :
    - Aspergillus, Fusarium, Mucor, Rhizopus: omgevingsschimmels
    - Candida: voornamelijk endogene bronnen.

Ladhani HA, Yowler CJ, Claridge JA. Burn Wound Colonization, Infection, and Sepsis. Surg Infect (Larchmt). 2021 Feb;22(1):44-48.

3. Virale infecties:
    - Immunosuppressie leidt tot reactiveringen van latente virale infecties
    - herpesvirussen (HSV , CMV, EBV): frequente reactivaties bij brandwondenpatiënten
    - verantwoordelijk voor 5% van de dodelijke infecties

d'Avignon L, Hogan B, Murray C, Loo F, Hospenthal D, Cancio L et al.: Contribution of bacterial and viral infections to attributable mortality in patients with severe burns: An autopsy series. Burns, 36: 773-9, 2010.

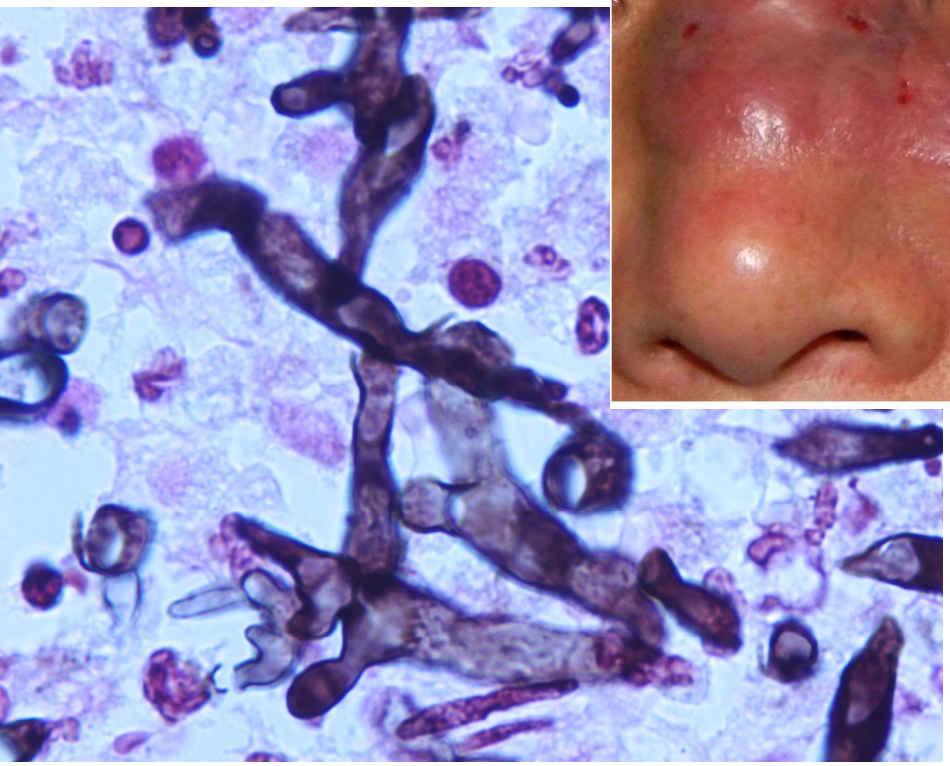
Schimmels in brandwonden patiënten

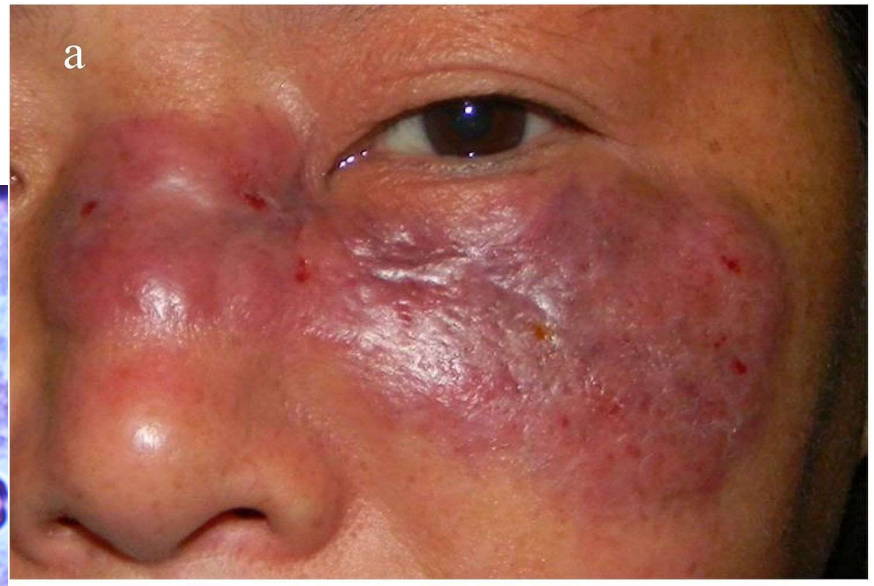
- Brandwondenpatiënten: meerdere risicofactoren voor schimmelinfectie:
  - aantasting van de integriteit van de huidbarrière,
  - immuunstoornissen,
  - breedspectrum- en langdurige antibioticatherapie,
  - langdurig verblijf op de ICU,
  - aanwezigheid van katheters +++,
  - parenterale voeding
  - meerdere operaties …

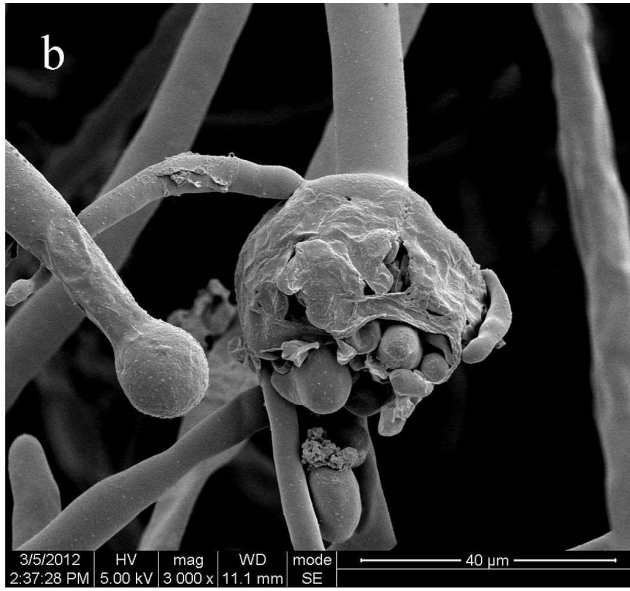
Ha J, Italiano C, Heath C, Shih S, Rea S, Wood F: Candidemia and invasive candidiasis: A review of the literature for the burns surgeon. Burns, 37: 181-95, 2011

DEFENSIE
Medische Component

Mucormycose – “Zwarte schimmel”



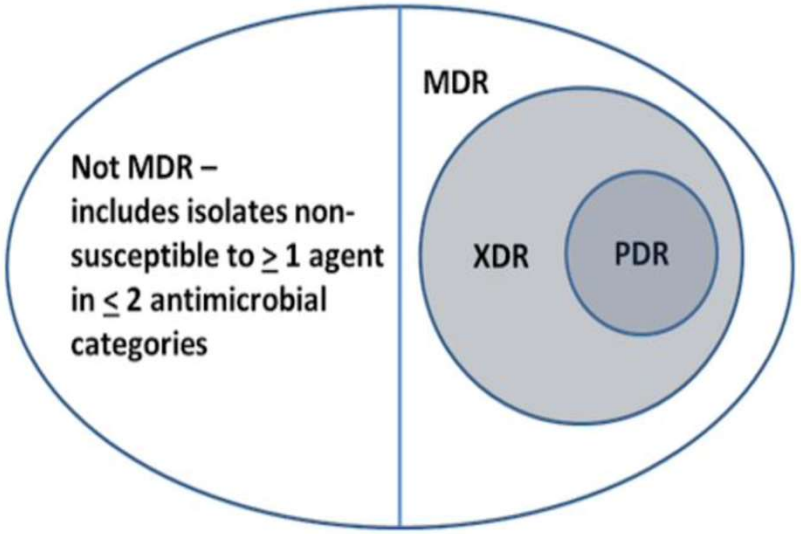




R/**chirurgie** + amfotericine B liposomaal of isavuconazol

DEFENSIE
Medische Component

Different terminologies to describe bacteria resistant to unrelated classes of ABs



MDR (multi-drug resistant)
Non-susceptibility to at least one agent in three or more antimicrobial classes

XDR (extensively drug resistant)
Non-susceptibility to at least one agent in all but two or fewer antimicrobial classes

PDR (pan-drug resistant)
Non-susceptibility to all Agents in all antimicrobial categories

DEFENSIE
Medische Component

Voorbeelden resistente kiemen

1. Acinetobacter baumannii
Ampicilline (R)
Tetracycline (R)
Amoxicilline+clavulanique (R)
Imipenem >= 16 (R)
Amikacine 16 (R)
Ciprofloxacine >= 4 (R)
Trimetoprime+Sulfa >= 320 (R)
Meropenem (meningitis) >= 16 (R)
Meropenem (other) >= 16 (R)
Ertapenem (R)
Tobramycine 8 (R)
Gentamicine 4 (S)
Azithromycine (R)
Cefotaxime (R)
Fosfomycine (R)
Colistine <= 0.5 (S)
Levofloxacin >= 8 (R)

2. Pseudomonas aeruginosa
Ampicilline (R)
Tetracycline (R)
Amoxicilline+clavulanique (R)
Ticarcilline >= 128 (R)
Ticarcilline+clavulanique >= 128 (R)
Imipenem >= 16 (R)
Ceftazidime 2 (R)
Aztreonam 32 (R)
Amikacine (other) 8 (S)
Amikacine (Urine) 8 (S)
Ciprofloxacine >= 4 (R)
Cefepime 8 (H)
Meropenem (meningitis) >= 16 (R)
Meropenem (other) >= 16 (R)
Ertapenem (R)
Kanamycine (R)
Tobramycine 4 (R)
Chloramphenicol (R)
Cefotaxime (R)
Tigecycline (R)
Pip-Tazobactam >= 128 (R)
Colistine 2 (S)
Levofloxacin >= 8 (R)

1. Acinetobacter baumannii
Ampicilline (R)
Tetracycline (R)
Amoxicilline+clavulanique (R)
Imipenem >= 16 (R)
Amikacine >= 64 (R)
Ciprofloxacine >= 4 (R)
Trimetoprime+Sulfa >= 320 (R)
Meropenem (meningitis) >= 16 (R)
Meropenem (other) >= 16 (R)
Ertapenem (R)
Tobramycine >= 16 (R)
Gentamicine 4 (S)
Azithromycine (R)
Cefotaxime (R)
Fosfomycine (R)
Colistine >= 16 (R)
Levofloxacin >= 8 (R)

2: Escherichia coli,veel
ESBL POSITIEF

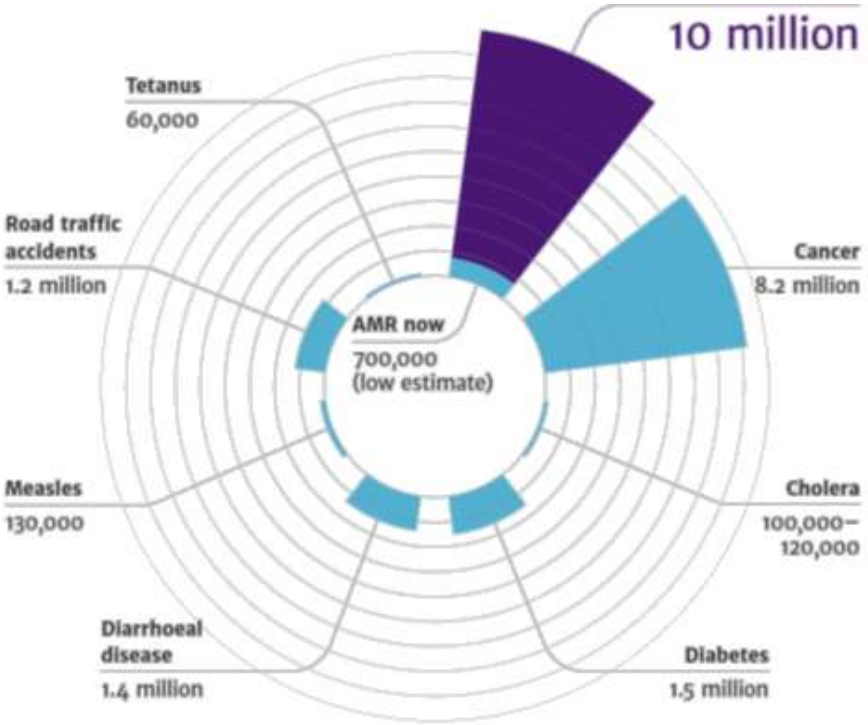
Levofloxacin > 2 : R
Tigecyclin <= 0.25
Ciprofloxacin > 2 : R
Colistin <= 1 : 2
Fosfomycin <= 32
Chlormaphenicol = 16 : R
Trimethoprim/Sulfamethoxazol > 4/76
Temocillin <= 32
Cefotaxim > 2 : R
Amikacin > 32 : R
Ceftazidim >128 : R
Ceftazidim/ 3-APB > 32
Ceftolozan/Tazobactam > 8/4
Imipenem = 2 : S (dose élevé)
Ceftazidim / Avibactam > 16/4
Meropenem = 8 : R
Meropenem/ EDTA <= 0.25
Meropenem/3-APB > 32
Piperacillin / Tazobactam > 64/4 : R
Piperacillin > 16 : R
(Microdilutiemethode!)

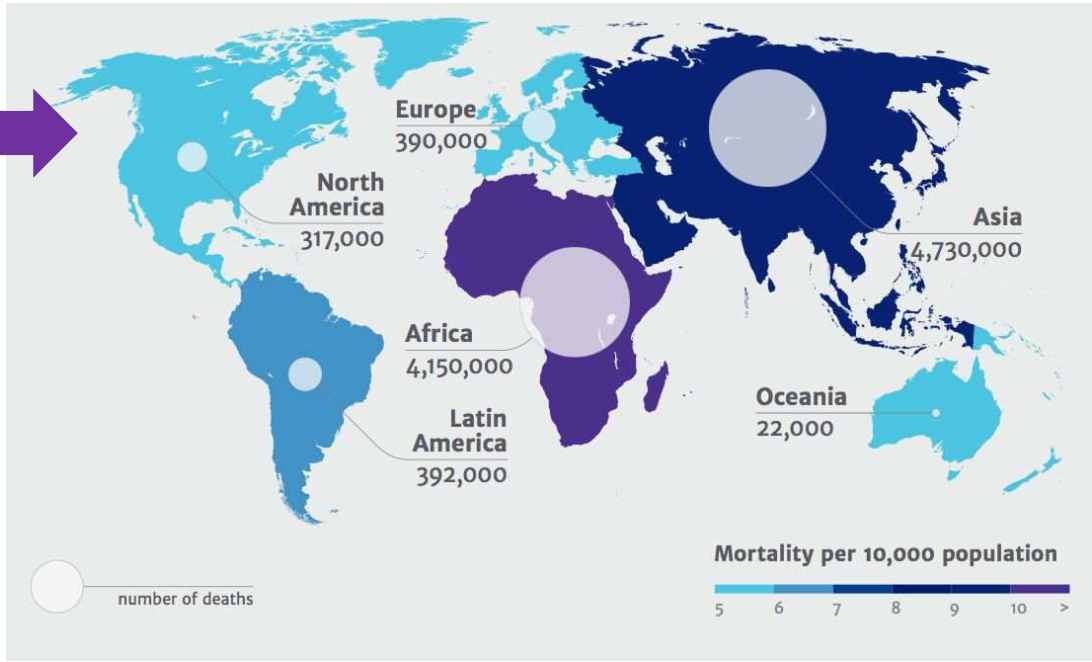
1: Klebsiella pneumoniae sub.pneumoniae
- Ampc detected!

Levofloxacin > 2 R
Tigecyclin = 1 R
Ciprofloxacin > 2 R
Colistin > 8 R
Fosfomycin = 128 R
Chlormaphenicol > 16
Trimethoprim/Sulfamethoxazol > 4/76 R
Temocillin > 128 R
Cefotaxim > 2 R
Amikacin > 32 R
Ceftazidim >128 R
Ceftazidim/ 3-APB > 32
Ceftolozan/Tazobactam > 8/4 R
Imipenem > 8
Ceftazidim / Avibactam > 16/4 R
Meropenem > 128
Meropenem/ EDTA > 32
Meropenem/3-APB > 32
Piperacillin / Tazobactam > 64/4 R
Piperacillin > 16
(Microdilutiemethode!)

DEFENSIE
Medische Component

Sterfgevallen als gevolg van antimicrobiële resistentie in 2050





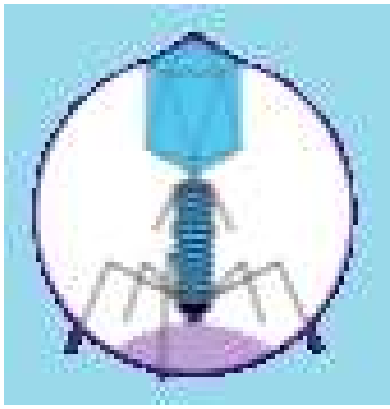
Source:
The Review on Antimicrobial Resistance 2014

DEFENSIE
Medische Component

DEFENSIE
Medische Component

Faagtherapie

Bacteriofagen

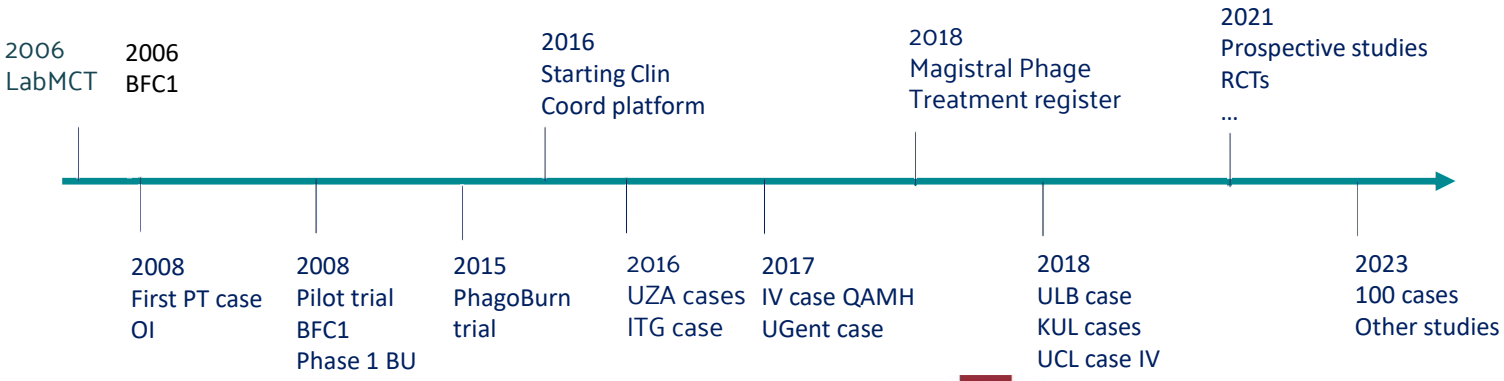


- Virussen die zich richten op bacteriën en ze doden

- Voordelen:
  - Prokaryoot-specifiek
  - Zelf amplifying
  - Co-evolutie met bacteriële gastheer
  - Productieproces
    - Snel
    - Eenvoudig
    - Tegen lage kosten (geen patenten)
    - Geen koudeketen nodig

- Indicaties:
  - AB-resistentie
  - AB-allergie/-intolerantie
  - Terugkerende/chronische infectie ondanks gevoelige AB-therapie
  - Dekolonisatie
  - Adjunct-therapie
  - Vermijden grote operaties

Faagtherapie KAMH



Int J Burn Trauma 2014;4(2):66-73
www.IJBT.org /ISSN:2160-2026/IJBT0001948

Original Article

Experimental phage therapy of burn wound infection: difficult first steps

Efficacy and tolerability of a cocktail of bacteriophages to treat burn wounds infected by *Pseudomonas aeruginosa* (PhagoBurn): a randomised, controlled, double-blind phase 1/2 trial

Patrick Jault, Thomas Leclerc, Serge Jennes, Jean Paul Pirnay, Yok-Ai Que, Gregory Resch, Anne Françoise Rousseau, François Ravat, Hervé Carsin, Ronan Le Floch, Jean Vivien Schaal, Charles Soler, Cindy Fevre, Isabelle Arnaud, Laurent Bretaudeau, Jérôme Gabard

viruses

MDPI

Communication

The Magistral Phage

Jean-Paul Pirnay [1,*], Gilbert Verbeken [1], Pieter-Jan Ceyssens [2], Isabelle Huys [3], Daniel De Vos [1], Charlotte Ameloot [4] and Alan Fauconnier [4,5]

DEFENSIE
Medische Component

Aanvragen voor fagentherapie (tot 2019)

Processing Phage Therapy Requests in a Brussels Military Hospital: Lessons Identified

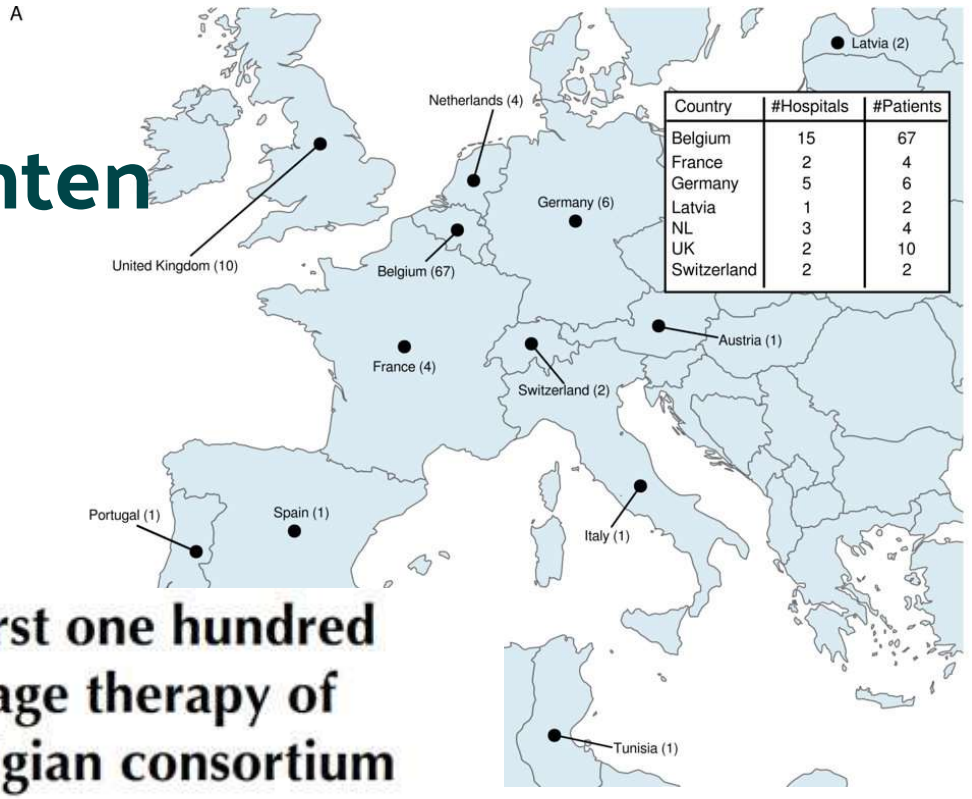
Sarah Djebara [1,*], Christiane Maussen [1], Daniel De Vos [2], Maya Merabishvili [2], Benjamin Damanet [1], Kim Win Pang [1], Peggy De Leenheer [1], Isabella Strachinaru [1], Patrick Soentjens [1] and Jean-Paul Pirnay [2]

- 70 applicants (26.9%) did not respond to the email request for more information;
- 124 requests (47.7%) concerned bacterial pathogens against which the QAMH had no potent phages available;
- 46 applications (17.7%) did not meet the other two eligibility criteria (antibiotic treatment failure and/or absence of other therapeutic options);
- 5 (25%) out of the 20 infecting bacterial strains for which a phagogram was performed were found to be non-susceptible to the available phages.

Djebara, S.; Maussen, C.; De Vos, D.; Merabishvili, M.; Damanet, B.; Pang, K.W.; De Leenheer, P.; Strachinaru, I.; Soentjens, P.; Pirnay, J.-P. Processing Phage Therapy Requests in a Brussels Military Hospital: Lessons Identified. Viruses 2019, 11, 265. https://doi.org/10.3390/v11030265

DEFENSIE
Medische Component

2023: 100 behandeld patiënten



Country	#Hospitals	#Patients
Belgium	15	67
France	2	4
Germany	5	6
Latvia	1	2
NL	3	4
UK	2	10
Switzerland	2	2

Retrospective, observational analysis of the first one hundred consecutive cases of personalized bacteriophage therapy of difficult-to-treat infections facilitated by a Belgian consortium

Jean-Paul Pirnay[1,66], Sarah Djebara[2,66], Griet Steurs[1], Johann Griselain[1], Christel Cochez[1], Steven De Soir[1], Tea Glonti[1], An Spiessens[2], Emily Vanden Berghe[2], Sabrina Green[3], Jeroen Wagemans[3], Cédric Lood[3], Eddie Schrevens[4], Nina Chanishvili[5], Mzia Kutateladze[5], Mathieu de Jode[6], Pieter-Jan Ceyssens[6], Jean-Pierre Draye[1], Gilbert Verbeken[1], Daniel De Vos[1], Thomas Rose[1], Jolien Onsea[7], Brieuc Van Nieuwenhuyse[8], Bacteriophage Therapy Providers*, Bacteriophage Donors**, Patrick Soentjens[2,67], Rob Lavigne[3,67] & Maya Merabishvili[1,67]

DEFENSIE
Medische Component

DEFENSIE
Medische Component

Vaccinaties en studies

Rabies

- Lyssavirus verspreid door **het speeksel** van **besmette zoogdieren**
- Ziektesymptomen : **7 dagen → maanden later**
- Fataal verloop: **onmiddellijk actie** na een mogelijke besmetting!
- **Geen behandeling** eens er ziektesymptomen zijn
- Bijna **100% dodelijke afloop**

- PREP:
  - Totaal van 4 dosissen: ID twee dosissen (0.1ml) op dag 0 en dag 7
  - Serologische controle tussen D14 en D28 : titer **> 0,5 IU/ml**

DEFENSIE
Medische Component

Clinical Infectious Diseases

Issues More Content Publish Purchase Advertise About Clinical Infectious

Volume 68, Issue 4
15 February 2019

Article Contents

Abstract

JOURNAL ARTICLE

Preexposure Intradermal Rabies Vaccination: A Noninferiority Trial in Healthy Adults on Shortening the Vaccination Schedule From 28 to 7 Days

Patrick Soentjens, Petra Andries, Annelies Aerssens, Achilleas Tsoumanis, Raffaela Ravinetto, Walter Heuninckx, Harry van Loen, Bernard Brochier, Steven Van Gucht, Pierre Van Damme, Yven Van Herrewege, Emmanuel Bottieau

Clinical Infectious Diseases, Volume 68, Issue 4, 15 February 2019, Pages 607–614,
https://doi.org/10.1093/cid/ciy513
Published: 25 June 2018 **Article history**

Abstract

Background

The existing 4-week preexposure rabies vaccination schedule is costly and often not practicable. Shorter effective schedules would result in wider acceptance.

Methods

We conducted a noninferiority trial in 500 healthy adults comparing the safety and immunogenicity of a 2-visit (days 0 and 7) intradermal (ID) primary vaccination (2 doses of 0.1 mL ID of the human diploid cell culture rabies vaccine [HDCV] at days 0 and 7) vs a standard 3-visit schedule (single dose of 0.1 mL ID at days 0, 7, and 28). One year to 3 years after primary vaccination, a single booster dose of 0.1 mL ID of HDCV was given to evaluate the anamnestic rabies antibody response. The primary endpoint for immunogenicity was the percentage of subjects with an adequate antibody level >0.5 IU/mL 7 days after the booster injection. The safety endpoint was the proportion of participants developing adverse reactions following the primary vaccination and/or booster dose.

Results

All subjects in both study groups possessed a rabies antibody titer >0.5 IU/mL on day 7 following the booster dose. Following the booster dose, subjects exposed to the double-dose 2-visit ID schedule had a geometric mean titer of 37 IU/mL, compared with 25 IU/mL for the single-dose 3-visit schedule ($P < .001$). Local reactions at the injection site following primary vaccination were mild and transient.

Conclusions

In healthy adults, ID administration of a double dose of 0.1 mL of HDCV over 2 visits (days 0 and 7) was safe and not inferior to the single-dose 3-visit schedule.

SINGLE-R Study

A two-centre open-label non-inferiority trial to assess the immunogenicity and safety of an intradermal and an intramuscular single-visit dosing regimen of purified chick-embryo cell-culture rabies vaccine in adults

Study sites:

- QAMH Brussels
- ITG Antwerp

SINGLE-R RCT (N = 360)

Vaccine groups 1 to 3	PrEP	Vol.	V1A Day 0	V1B Day 7	V2 Day 28	PEP	Vol.	V3A Day 0 +180	V3B Day 3 +180	V4 Day 7 +180	V5 Day 28 +180	V6 Day 90 +180	Total Vol.	Study visits
1. N = 120	1^1IM	1 x 1.0 mL				2^1M	2 x 1.0 mL						3.0 mL	7
2. N = 120	1^4ID	4 x 0.1 mL				1^4ID	4 x 0.1 mL						0.8 mL	6
3. N = 120	2^1IM	2 x 1.0 mL				2^1M	2 x 1.0 mL						4.0 mL	8
Blood Sampling														
Subgroup Samples														

Intramuscular injection *Intradermal injection* *Blood sample 10 mL*

Question: Are shorter accelerated low-dose primary vaccination schedules showing adequate immune responses against rabies?

Design: Rabies vaccination prospective clinical trial

Population: Belgian military personnel and travelers to rabies-endemic zones (N= 360)

DEFENSIE
Medische Component

Bazouka study

A single centre, open-label non-inferiority trial to assess the immunogenicity and safety of a single booster vaccine 5 years after rabies pre-exposure prophylaxis with 3 different intradermal regimens in Belgian soldiers

Question: Are shorter accelerated low-dose primary and/or booster vaccination schedules showing adequate immune responses against rabies? non-inferiority of neutralizing antibodies on day 7 after booster

Design: Rabies vaccination prospective clinical trial

Population: Belgian military personnel and travelers to rabies-endemic zones

Study site: QAMH Brussels

DEFENSIE
Medische Component

DEFENSIE
Medische Component

Laboratorium

ZHH

Verantwoordelijke artsen/ verpleegkundigen

Apotheek

Infectiologie

Bedankt.

Vragen?