Infections du Système Nerveux Central

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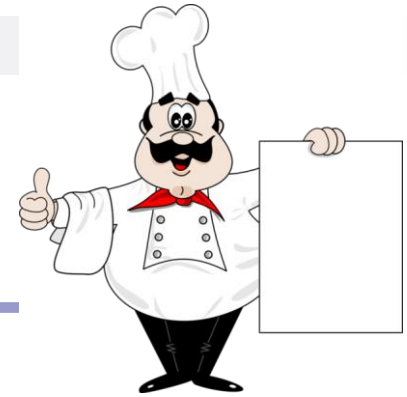
CHU Rennes

Université de Rennes

ESGIB ESCMID STUDY GROUP FOR INFECTIOUS DISEASES OF THE BRAIN

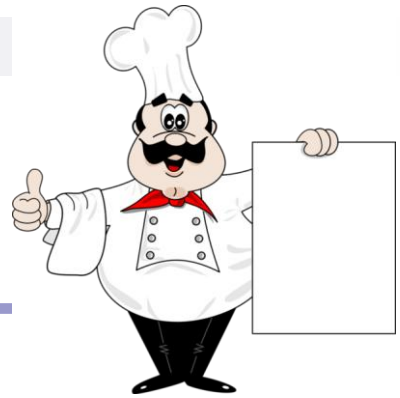
European Society of Clinical Microbiology and Infectious Diseases

Au menu



- **Méningites**
  - ✓ Méningite tuberculeuse
- **Abcès cérébraux**
  - ✓ Recommandations européennes ESCMID 2023
- **Encéphalites**
  - ✓ Leçons de la cohorte ENCEIF

Au menu



- **Méningites**
  - ✓ Méningite tuberculeuse

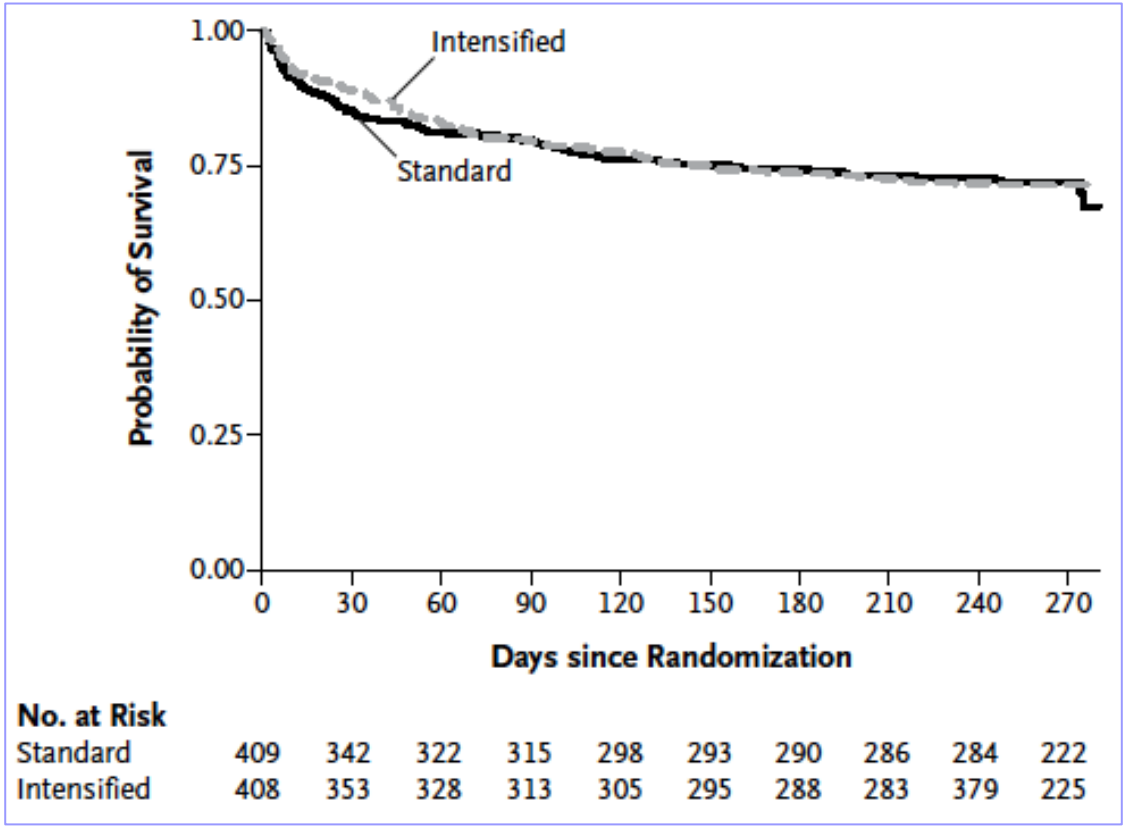
Gros efforts de recherche sur la TB neuro-méningée depuis 10 ans

(30-50% décès en 2025)

ORIGINAL ARTICLE

Intensified Antituberculosis Therapy in Adults with Tuberculous Meningitis

- **Traitement intensifié TB neuro-méningée**
  - Total 9 mois
  - 2RHZE/7RH
  - Dexamethasone => S8
  - Bras ‘intensifié’ => S8
    - **RMP 15 mg/kg/j**
    - **Lévoflo 20 mg/kg/j**

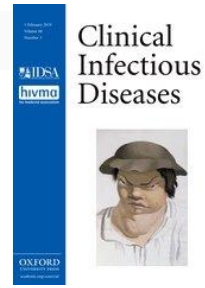


Heemskerk AD et al. N Engl J Med 2016

Clinical Outcomes of Patients With Drug-Resistant Tuberculous Meningitis Treated With an Intensified Antituberculosis Regimen

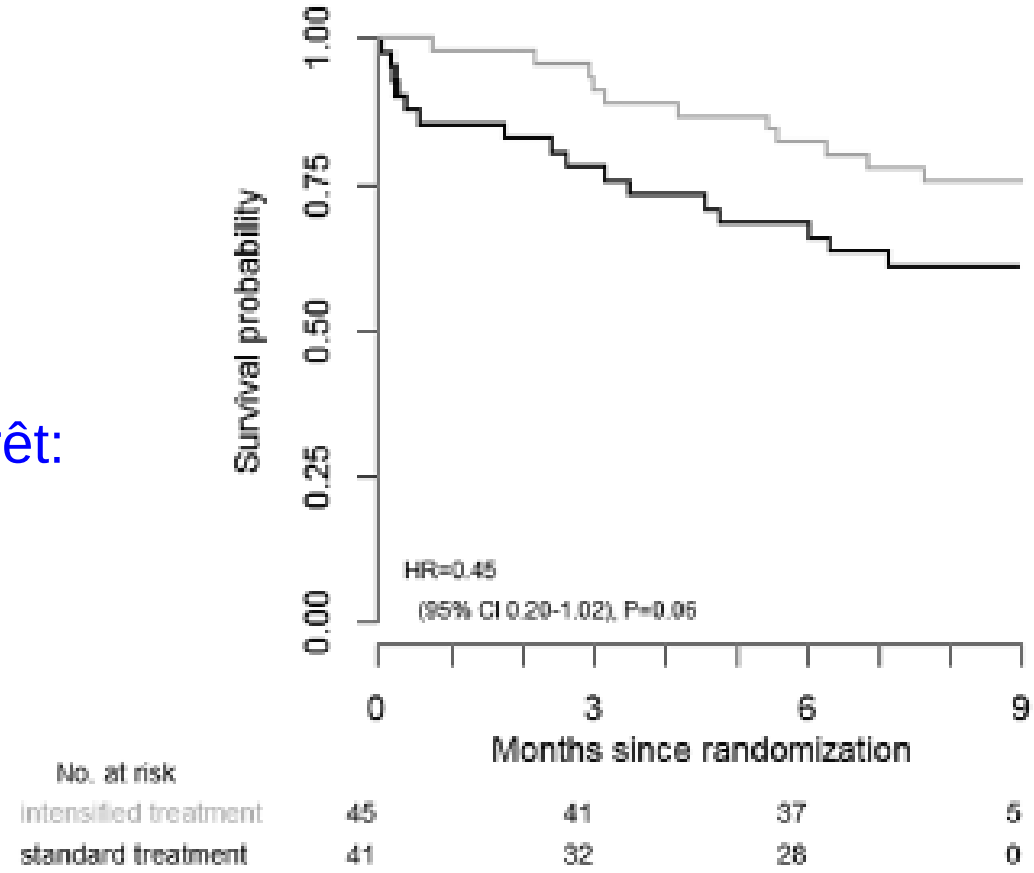
Clinical Infectious Diseases® 2017;65(1):20–8

A. Dorothee Heemskerk,[1,2] Mai Thi Hoang Nguyen,[1] Ha Thi Minh Dang,[1,3] Chau Van Vinh Nguyen,[1,4] Lan Huu Nguyen,[3] Thu Dang Anh Do,[1] Thuong Thuy Thuong Nguyen,[1] Marcel Wolbers,[1,2] Jeremy Da



A

Un groupe avec intérêt:
TB INH-R / RMP-S ?



Heemskerk AD et al. Clin Infect Dis 2017

High-Dose Oral and Intravenous Rifampicin for the Treatment of Tuberculous Meningitis in Predominantly Human Immunodeficiency Virus (HIV)-Positive Ugandan Adults: A Phase II Open-Label Randomized Controlled Trial

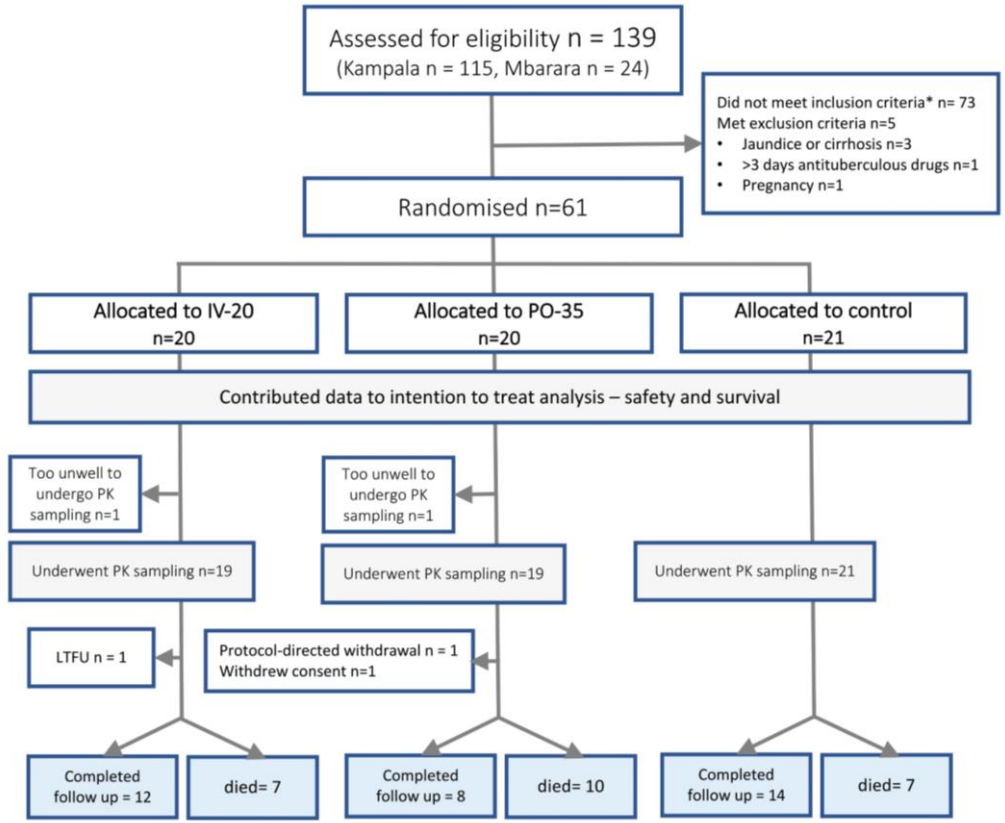
Fiona V. Cresswell,[1,2,3] David B. Meya,[2] Enock Kagimu,[2] Daniel Grint,[4] Lindsey te Brake,[5] John Kasibante,[2] Emily Martyn,[1] Morris Rutakingirwa,[2] Carson M. Quinn,[6] Micheal Okirwoth,[2] Lillian Tugume,[2] Kenneth Ssembambulidde,[2] Abdu K. Musubire,[2] Ananta S. Bangdiwala,[7] Allan Buzibye,[2] Conrad Muzoora,[8] Elin M. Svensson,[5,9] Rob Aarnoutse,[5] David R. Boulware,[10,a] and Alison M. Elliott[1,3,a]

Clinical Infectious Diseases

- **Traitement TB neuro-méningée hyper intensifié**
  - RHZE standard
  - *avec RMP* ***iv 20 mg/kg***
  - *ou RMP* ***oral 35 mg/kg***

✓**Etude pilote (n=61)**

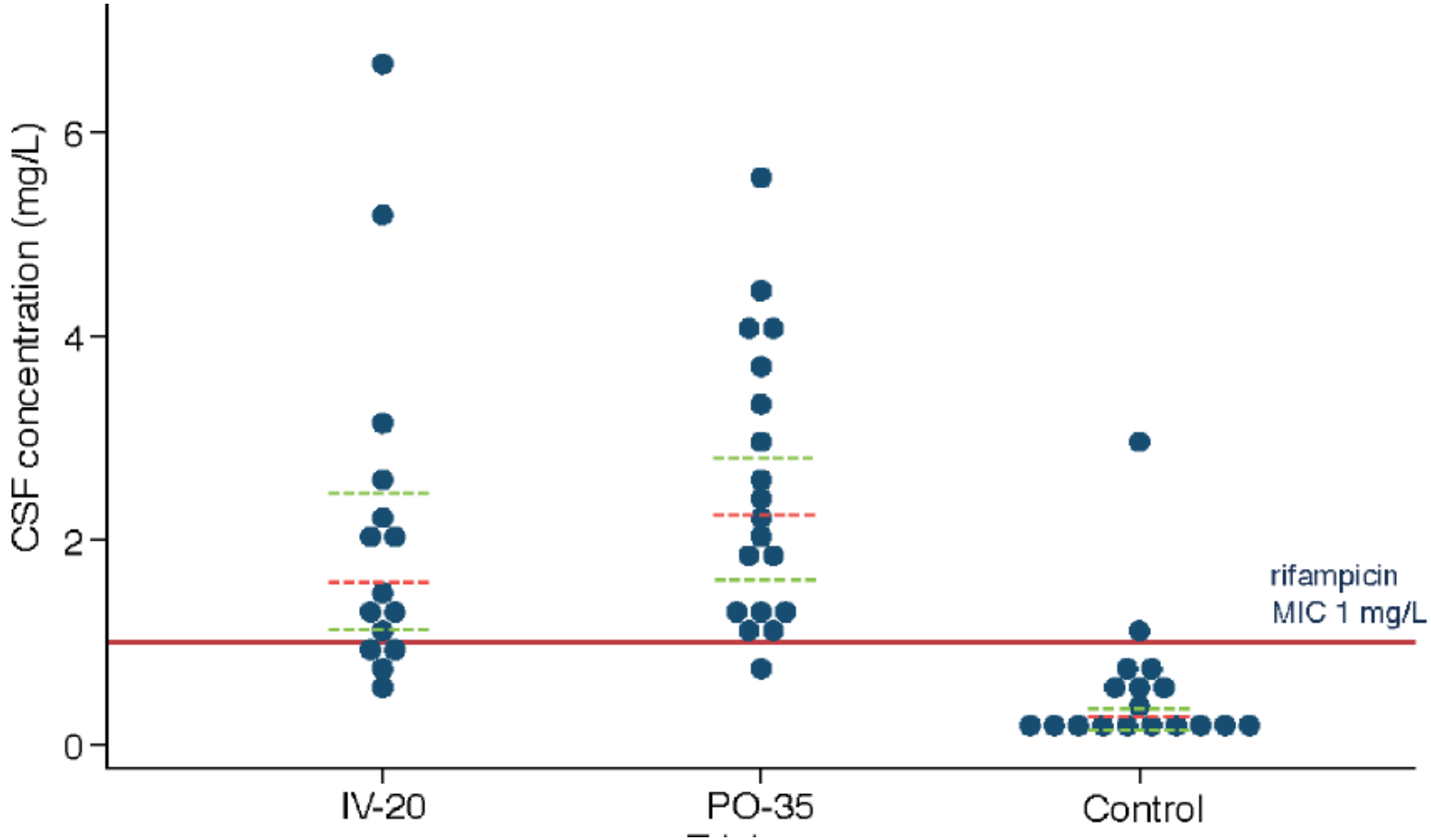
✓**PK + tolérance**



Cresswell F et al. Clin Infect Dis 2021

High-Dose Oral and Intravenous Rifampicin for the Treatment of Tuberculous Meningitis in Predominantly Human Immunodeficiency Virus (HIV)-Positive Ugandan Adults: A Phase II Open-Label Randomized Controlled Trial

Clinical Infectious Diseases



Cresswell F et al. Clin Infect Dis 2021

HIGH DOSE ORAL RIFAMPICIN FOR IMPROVED SURVIVAL OF TB MENINGITIS

High-dose rifampicin for tuberculous meningitis: the HARVEST phase III multi-country randomized clinical trial

Double-blinded, placebo controlled

Eligible: **microbiologically confirmed / clinically diagnosed**

Exclusion: confirmed other Dx; > 5 days TB therapy; protease-inh

All receive standard dose H, Z, E + steroids

Intervention: Rifampicin 35mg/kg/day weeks 0-8

(FDC + 4 pills 300 mg Rif if ≥ 38 kg, + 3 pills if < 38 kg)

Control: Rif 10mg/kg/day + placebo

(FDC + 4 pills placebo if ≥ 38 kg, + 3 pills if < 38 kg)

Stratification by site, HIV status and BMRC (severity) grade

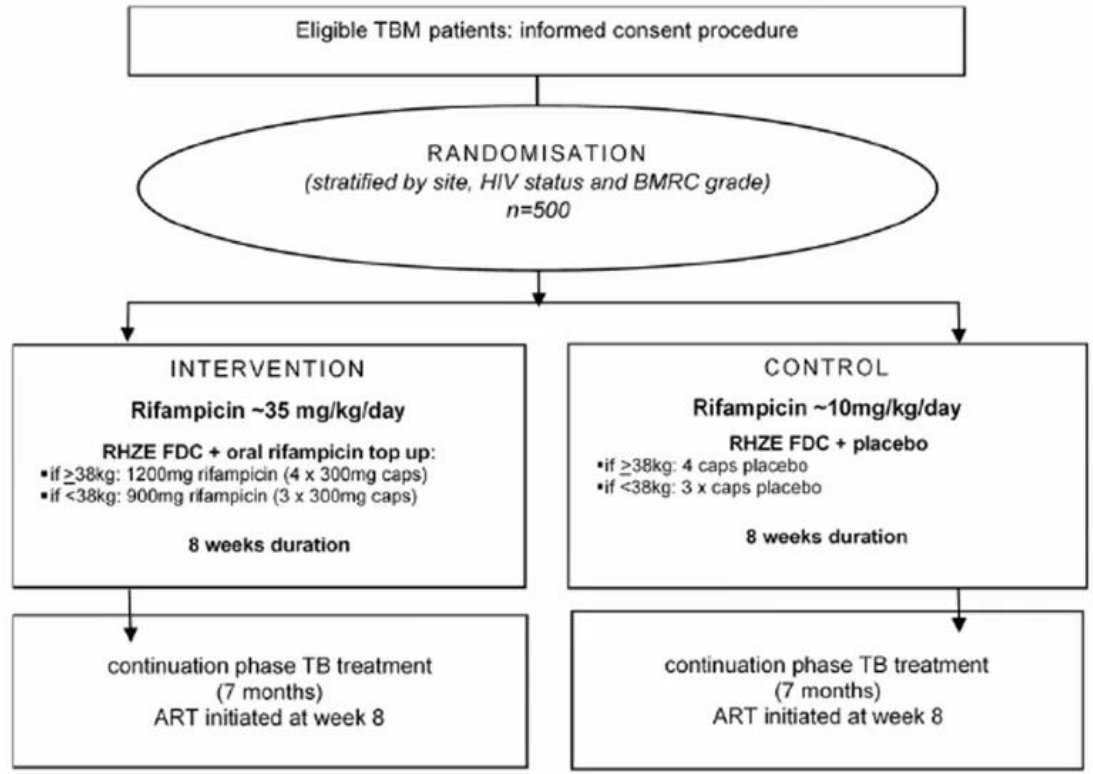
Primary endpoint: 6-month mortality

Powered for 13% absolute survival benefit and 5% LTFU

Secondary endpoints:

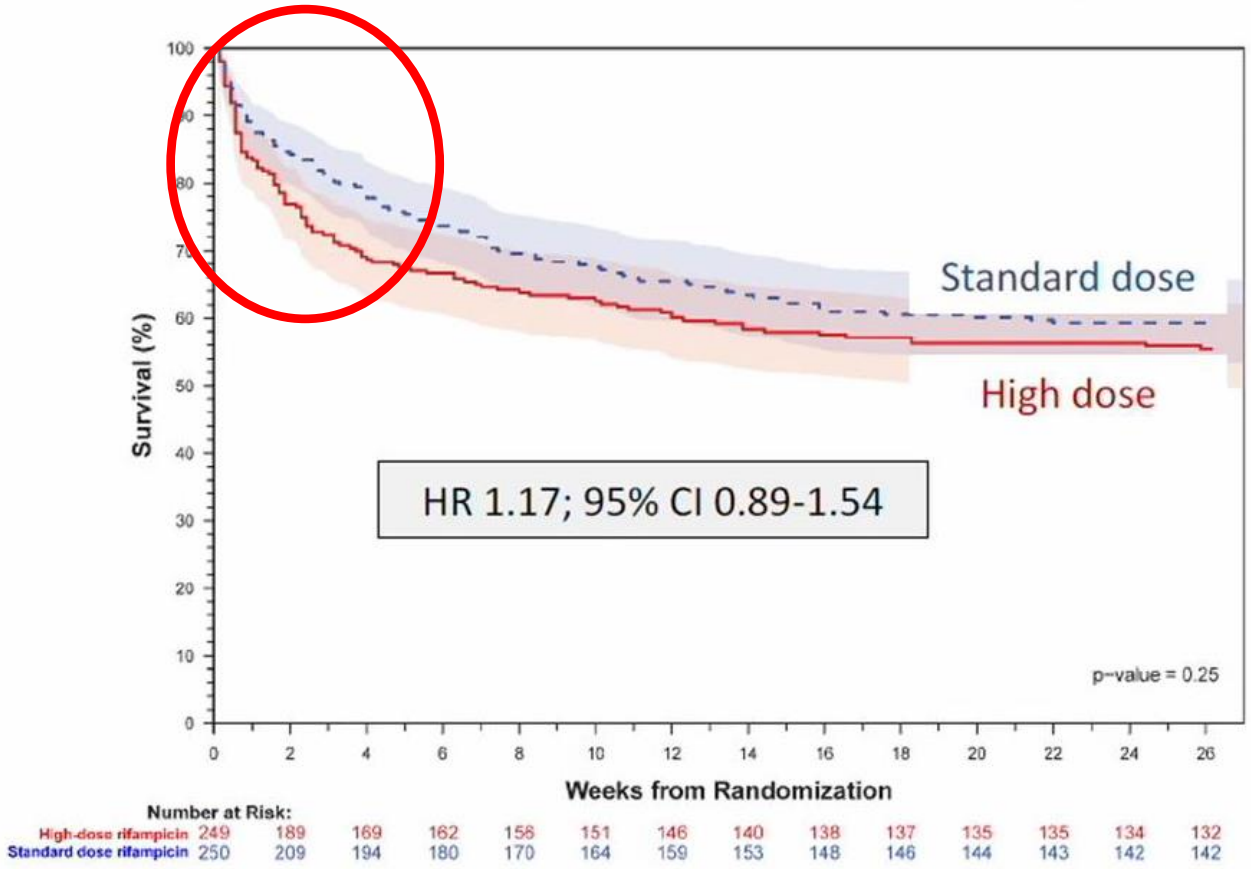
12-mth mortality, functional outcomes, safety, days of hospitalization, drug discontinuation, rehospitalization for neurological deterioration, management DILI

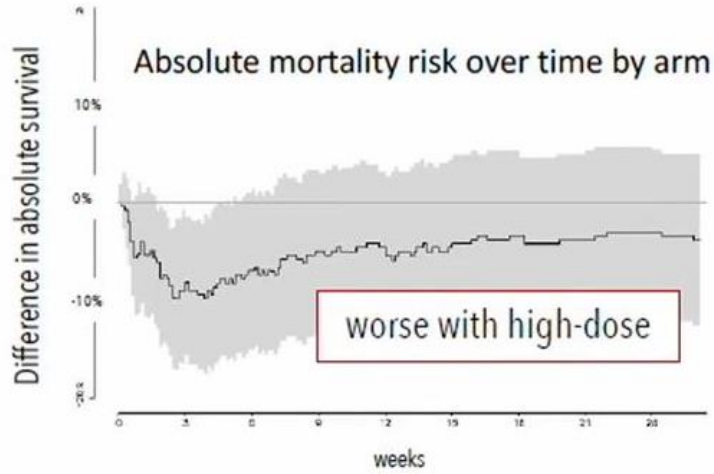
other: PK-PD; cost-effectiveness

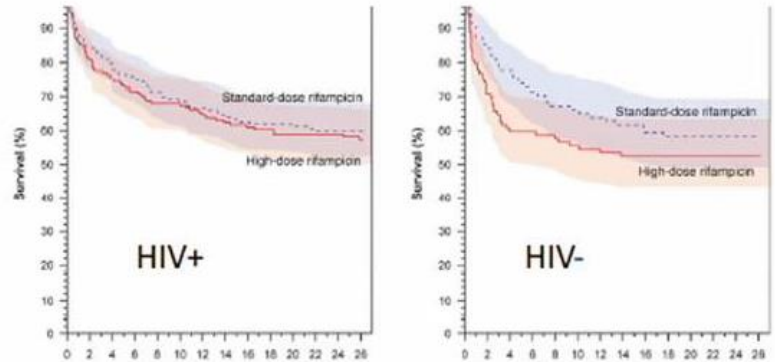


Meya DB et al. ESCMID Global 2025

No benefit from high-dose rifampicin





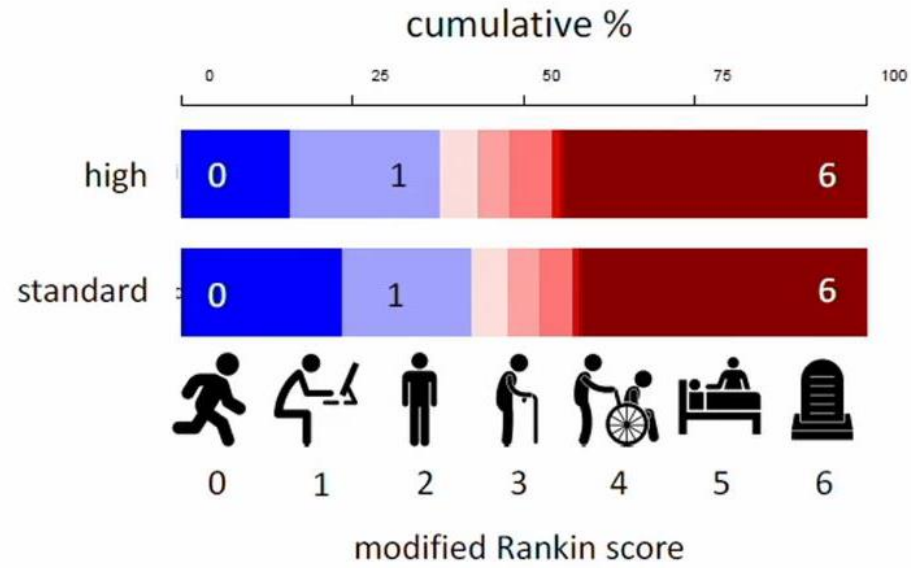


Meya DB et al. ESCMID Global 2025

Early response

	High-dose	standard
Time to death (d)	13 (IQR 4-39)	24.5 (IQR 6-56)
Normalized mental state day 20	28%	40%

Functional outcome (6 mths)



Meya DB et al. ESCMID Global 2025

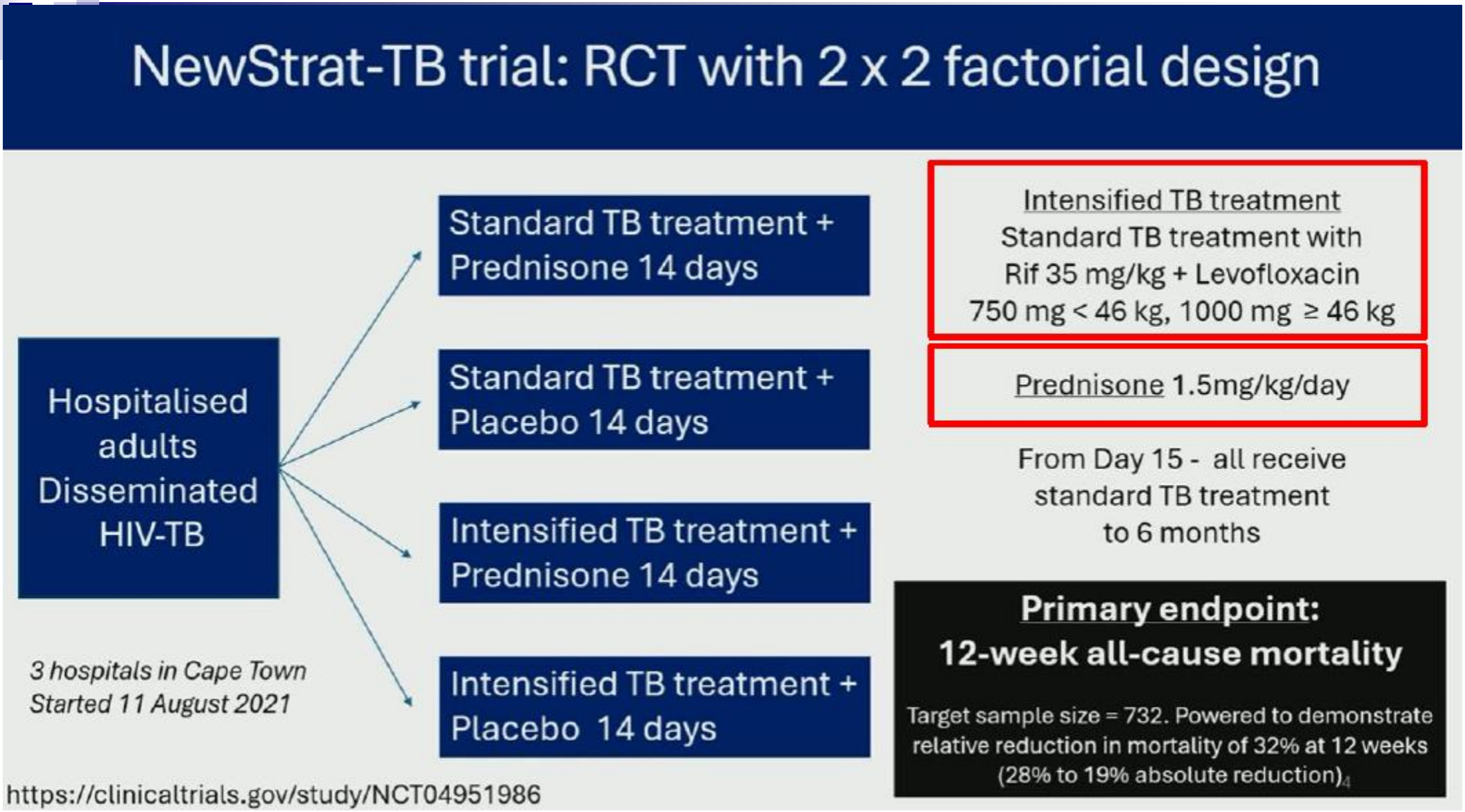
Summary

- First completed phase 3 RCT 35 mg/kg rif vs standard 10 for adult TBM
- Placebo-controlled double-blinded Uganda, Indonesia, South Africa (n=500)
- Severe disease, 61% HIV+

- 6-month survival similar with high-dose Rif
- No safety concerns
- Higher mortality first 3 weeks and slower normalization mental status
  (stronger induction steroids?)

Meya DB et al. ESCMID Global 2025

NewStrat-TB trial: RCT with 2 x 2 factorial design



Meintjes G et al. CROI 2025

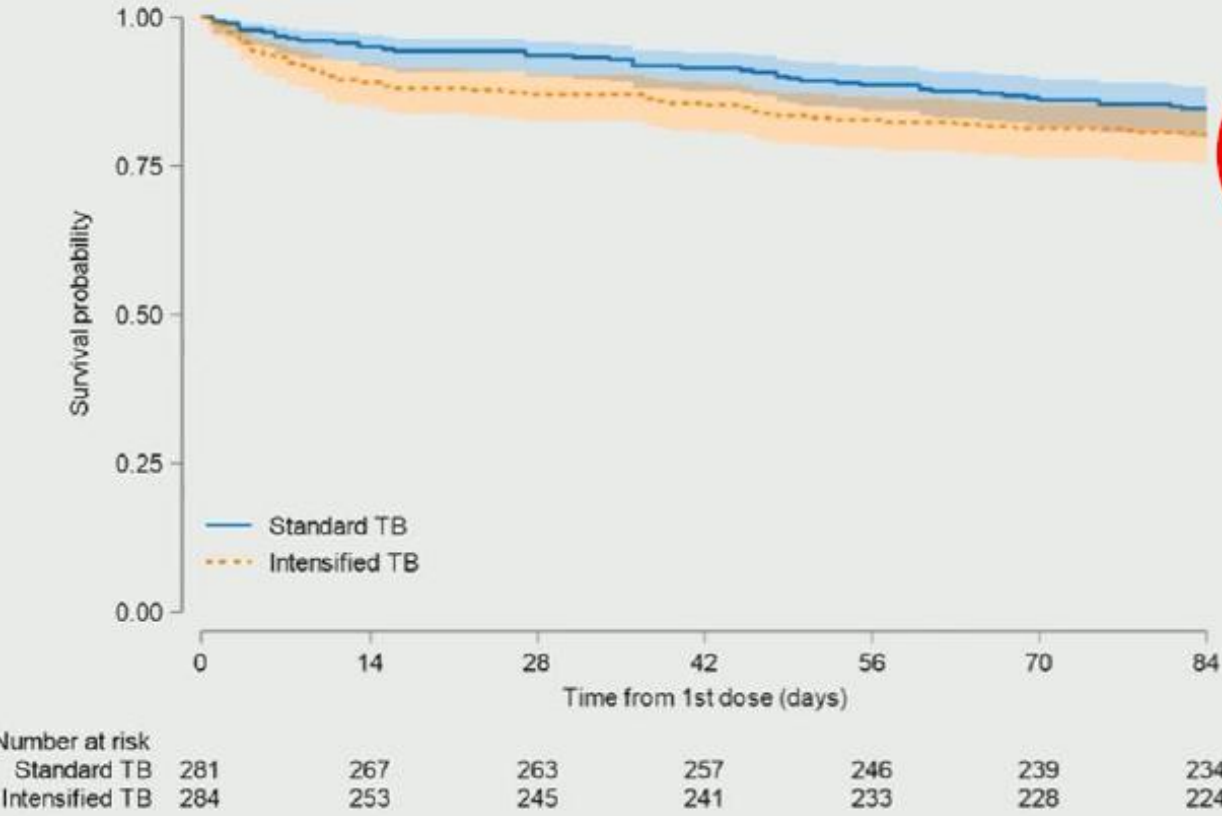
DSMB reviews

DSMB/6 months

- 5th review held on 5 June 2024, when 580 enrolled. Feedback:
  - *"We recommend that that randomization to the intensified anti-TB treatment versus standard anti-TB treatment is stopped immediately. There is a signal of harm caused by the intensified anti-TB treatment – specifically there is strong statistical evidence of higher week 2 mortality in patients randomized to intensified anti-TB treatment versus standard ....."*
  - *"We strongly recommend randomization to adjunctive prednisone or placebo continues (and you remain blind to this treatment allocation) ....."*

Meintjes G et al. CROI 2025

Mortality at 2 and 12 weeks



14-day mortality
31/284 (**10.9%**) in the intensified arm
14/281 (**5.0%**) in the standard arm
Absolute difference 5.9%
(95%CI: 1.5% - 10.3% (p=0.008))

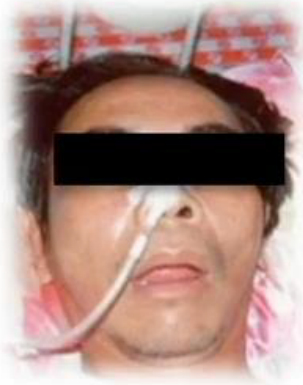
Mortality at 12 weeks (PRIMARY ENDPOINT)
56/284 (**19.8%**) in the intensified arm
43/281 (**15.4%**) in the standard arm
Absolute difference 4.4%
(95%CI: -2.0% - 10.8% (p=0.180))

Meintjes G et al. CROI 2025

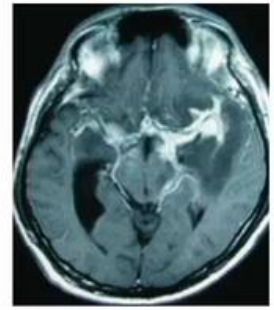
How to improve patient outcome?

earlier diagnosis &
start of therapy

better antibiotic therapy



Good neuro-critical care

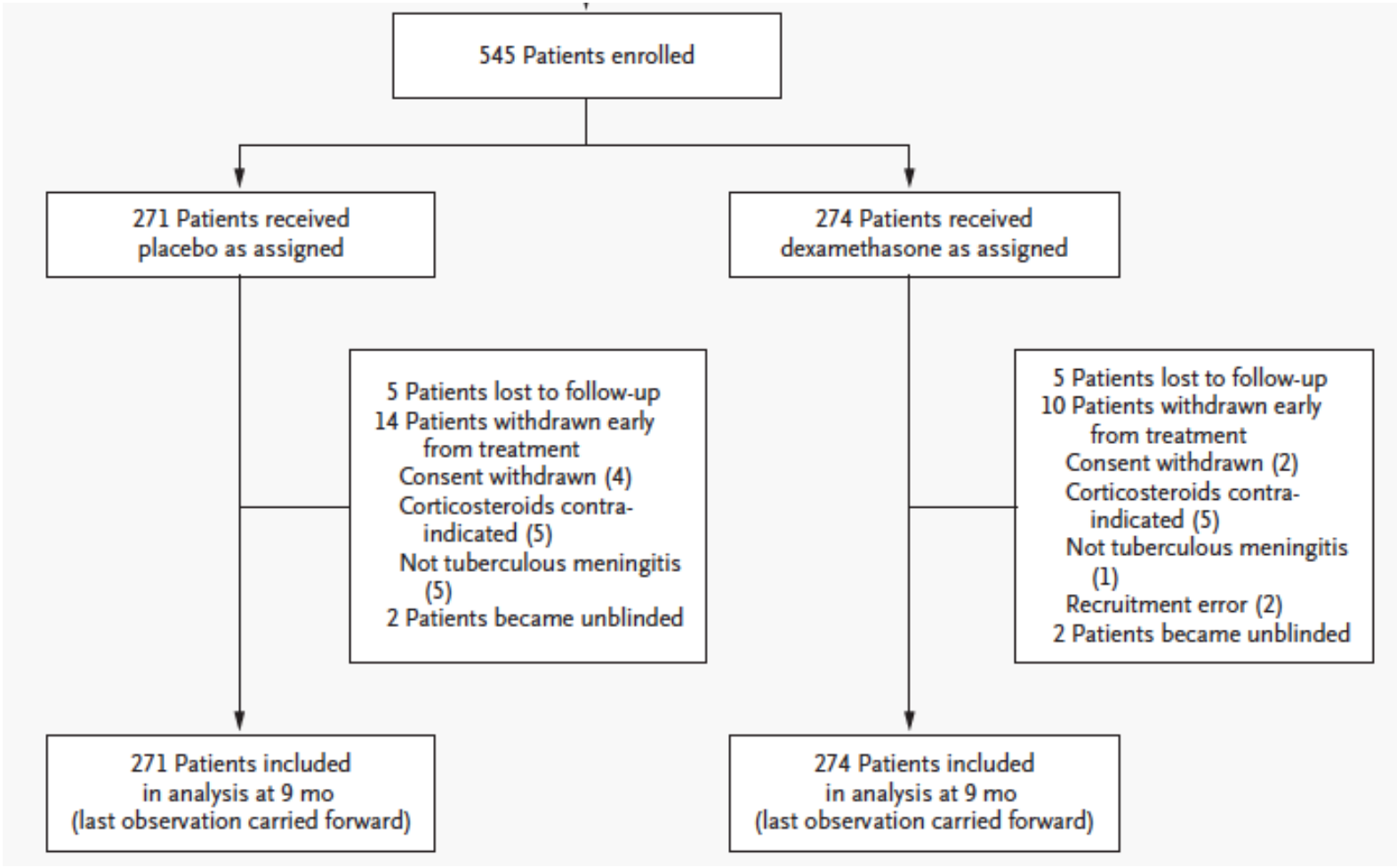


Targeting
inflammation

Meya DB et al. ESCMID Global 2025

ORIGINAL ARTICLE

Dexamethasone for the Treatment of Tuberculous Meningitis in Adolescents and Adults



Thwaites GE et al. N Engl J Med 2004

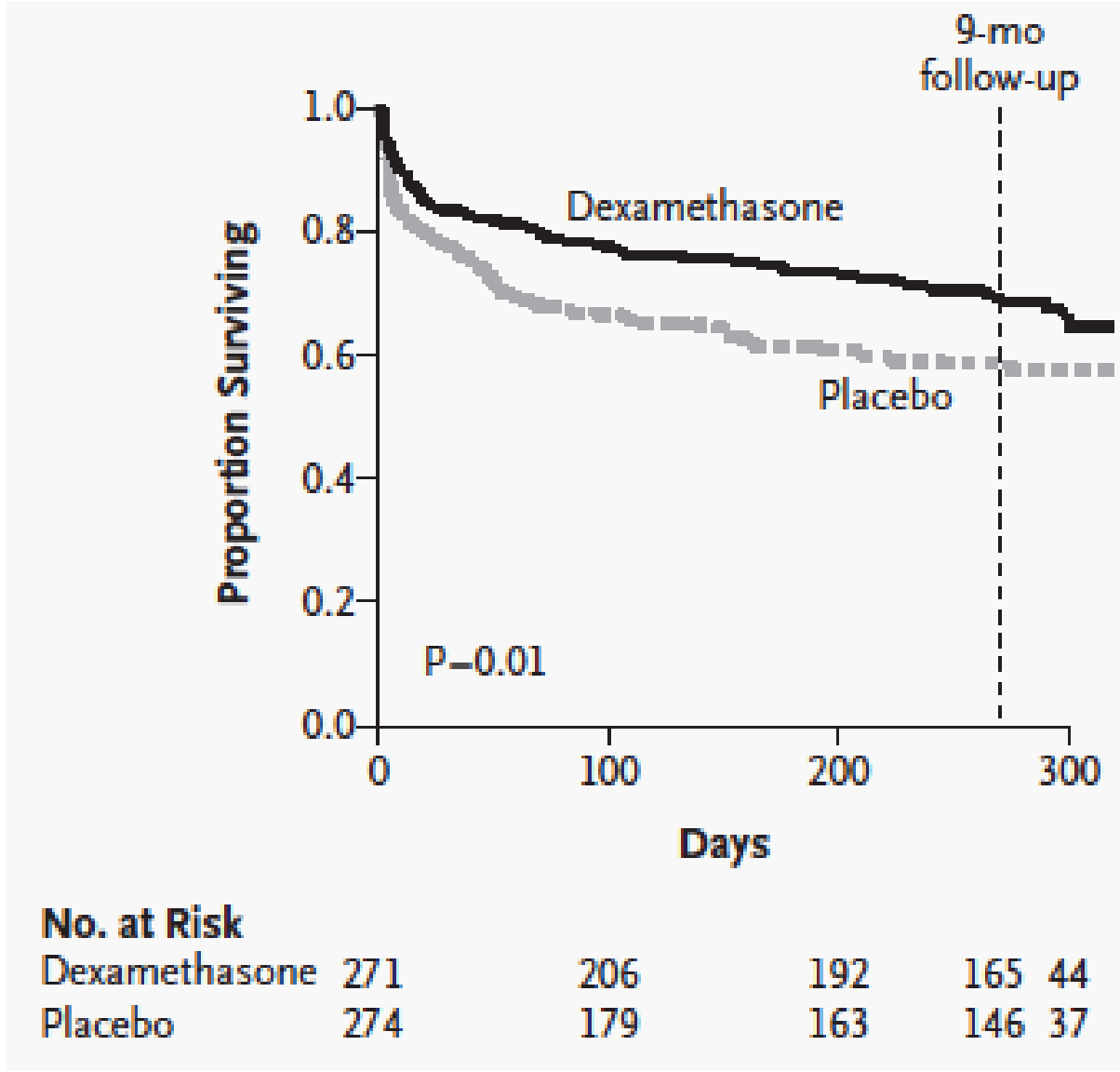
Pronostic en fonction de la gravité initiale

TABLE 1. British Medical Research Council clinical criteria for the severity of TBM[a]

Stage/grade	Classic criterion[b]	Contemporary criterion[c]
I	Fully conscious and no focal deficits	Alert and oriented without focal neurological deficits
II	Conscious but with inattention, confusion, lethargy, and focal neurological signs	Glasgow coma score of 14-11 or 15 with focal neurological deficits
III	Stuporous or comatose, multiple cranial nerve palsies, or complete hemiparesis or paralysis	Glasgow coma score of 10 or less, with or without focal neurological deficits

Outcome and Group	Dexamethasone	Placebo	Relative Risk (95% CI)	P Value
	no./total no. (%)			
Death				
All patients	87/274 (31.8)	112/271 (41.3)	0.69 (0.52–0.92)	0.01
Grade				
I	15/90 (16.7)	26/86 (30.2)	0.47 (0.25–0.90)	0.02
II	38/122 (31.1)	50/125 (40.0)	0.71 (0.46–1.1)	0.11
III	34/62 (54.8)	36/60 (60.0)	0.81 (0.51–1.29)	0.38
Relative risk of death stratified according to grade†			0.68 (0.52–0.91)	0.007
HIV status				
Negative	57/227 (25.1)	67/209 (32.1)	0.72 (0.51–1.02)	0.07
Positive	27/44 (61.4)	37/54 (68.5)	0.86 (0.52–1.41)	0.55

Thwaites et al, NEJM 2004



Thwaites GE et al. N Engl J Med 2004

Adjunctive Dexamethasone for Tuberculous Meningitis in HIV-Positive Adults

Joseph Donovan, Ph.D., Nguyen D. Bang, Ph.D., Darma Imran, M.D., Ho D.T. Nghia, Ph.D., Erlina Burhan, Ph.D., Dau T.T. Huong, M.Sc., Nguyen T.T. Hiep, M.D., Lam H.B. Ngoc, B.Sc., Dang V. Thanh, M.D.,

La dexaméthasone est-elle bénéfique au cours des TB neuro-méningées des PVVIH ?

- **Etude randomisée multicentrique double aveugle**
- **Vietnam, n = 520**
  - *Jamais reçu d'ARV = 50%*
  - *CD4 < 50/mm^3 = 50%*
- **Dexaméthasone, 6-8 semaines**
- **Critère principal: Survie à M12**

Donovan J et al. N Engl J Med 2023

Adjunctive Dexamethasone for Tuberculous Meningitis in HIV-Positive Adults

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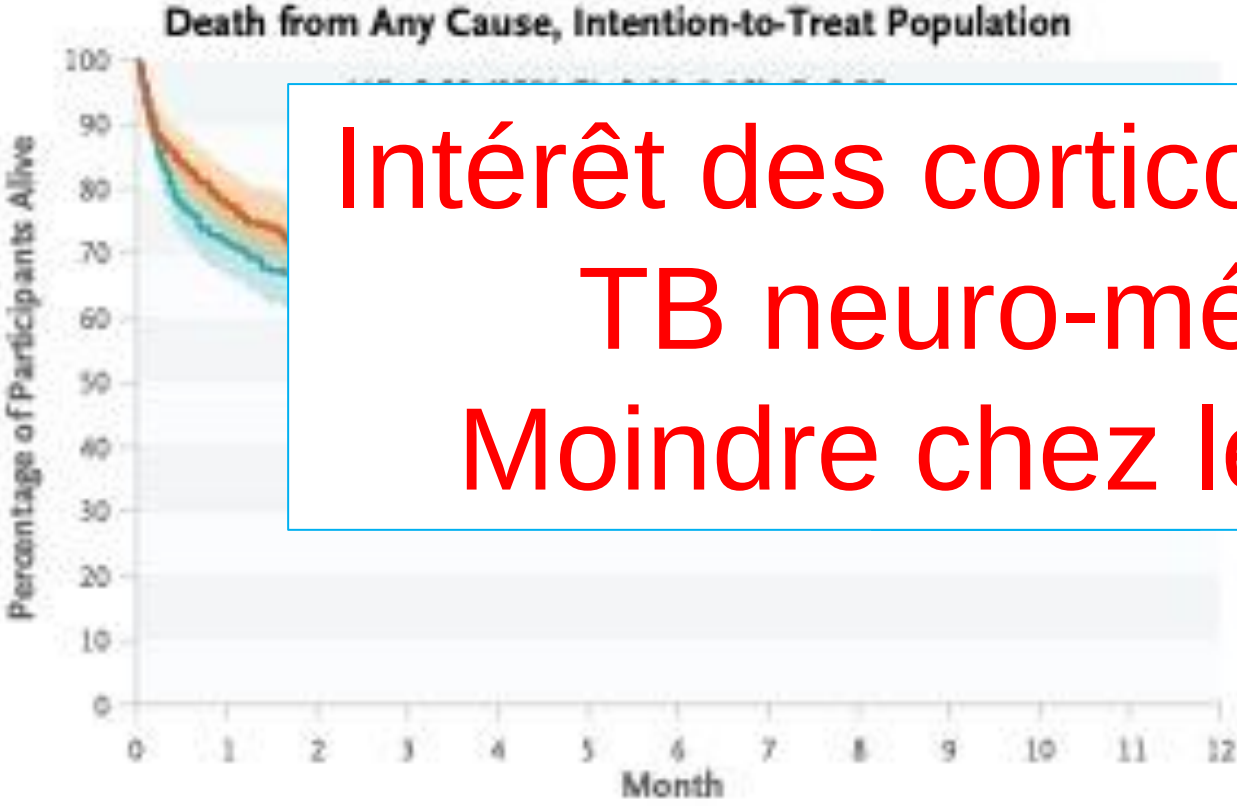
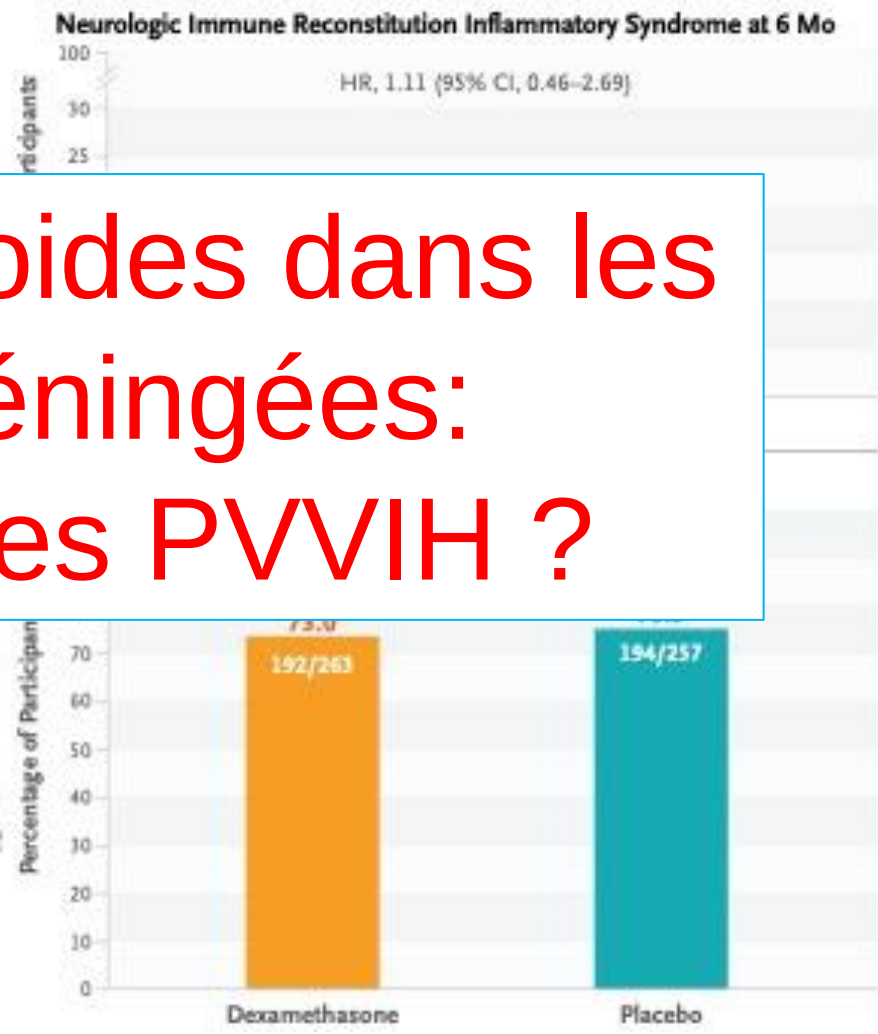




Intérêt des corticoides dans les TB neuro-méningées: Moindre chez les PVVIH ?

Donovan J et al. N Engl J Med 2023

Neuro-TB: messages

Gold standard 2025

- ✓ **Traitement prolongé (9-12 mois), corticoides systématiques**

Perspectives

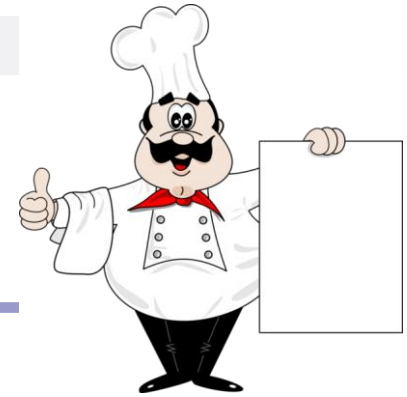
- ✓ **Traitements intensifiés (~~RMP fortes doses, FQ,~~ linézolide, aspirine ?)**

(INTENSE-TBM: Intensified tuberculosis treatment to reduce the high mortality of tuberculous meningitis in HIV- infected and uninfected patients)

- ✓ **Anti-TNF précoces pour TB neuro-méningées (+/- CTC) ?**

(TIMPANI: Tnf Inhibitors to reduce Mortality in HIV-1 infected PAtients with tuberculosis meNIngitis: a phase II, multicenter, randomized clinical trial)

Au menu



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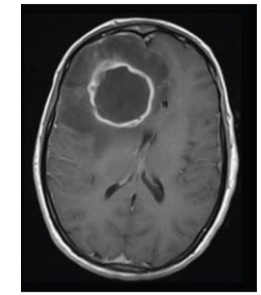
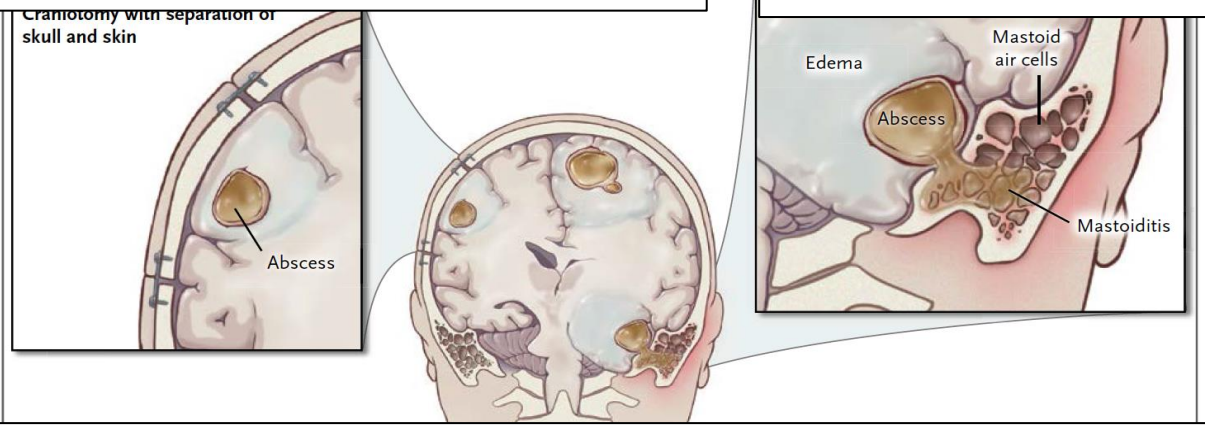


Physiopathologie

Infection par contiguïté: 50%

Traumatisme crânien, neurochirurgie

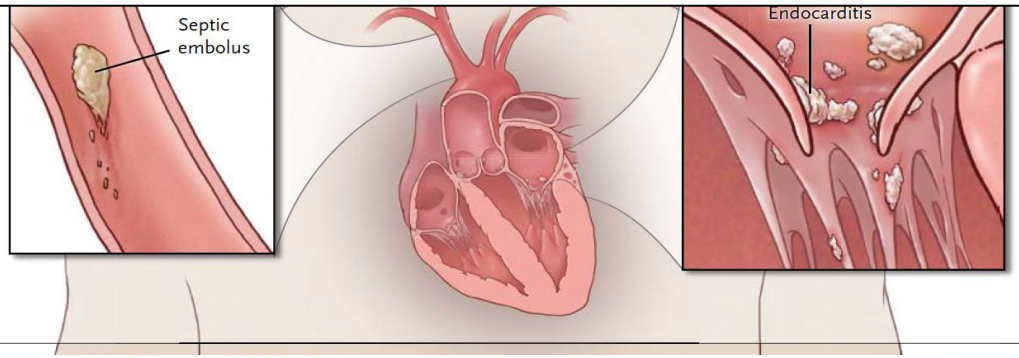
Infection ORL



Inconnue ???? 15-20%

Dissémination hématogène: 30-35%

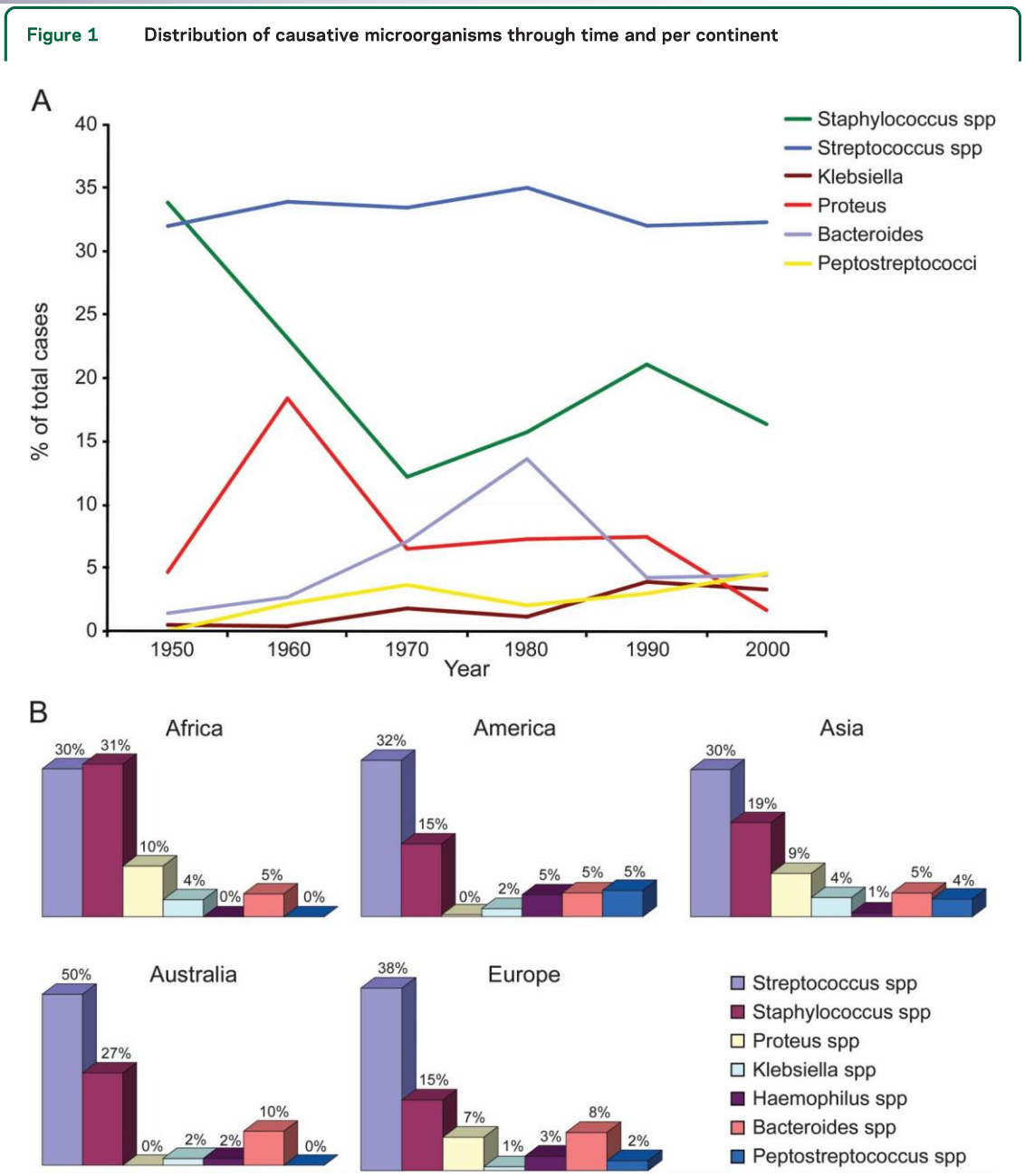
(endocardite, cardiopathie congénitale, foyers dentaires ou pulmonaires, shunts artério-veineux pulmonaires => Rendu Osler)



MC Brouwer et al. New Eng J Med 2014

Microbiology (1)

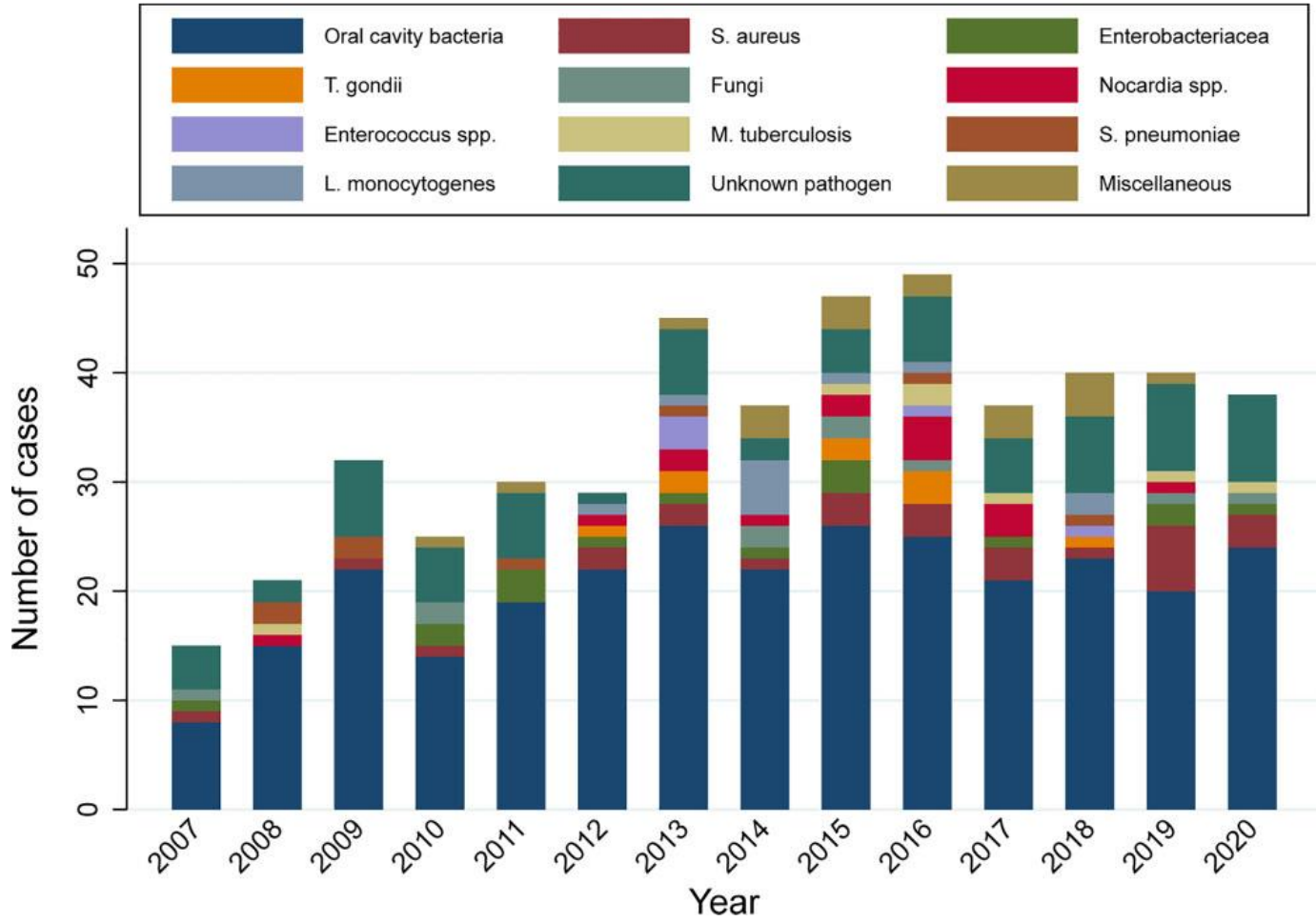
- **Meta-analysis (1935-2012)**
  - **6,700 cases with microbiology**
  - **Polymicrobial 25%**
    1. streptococci
    2. staphylococci
    3. strict anaerobes
    4. *Enterobacterales*



Brouwer MC et al. Neurology 2014

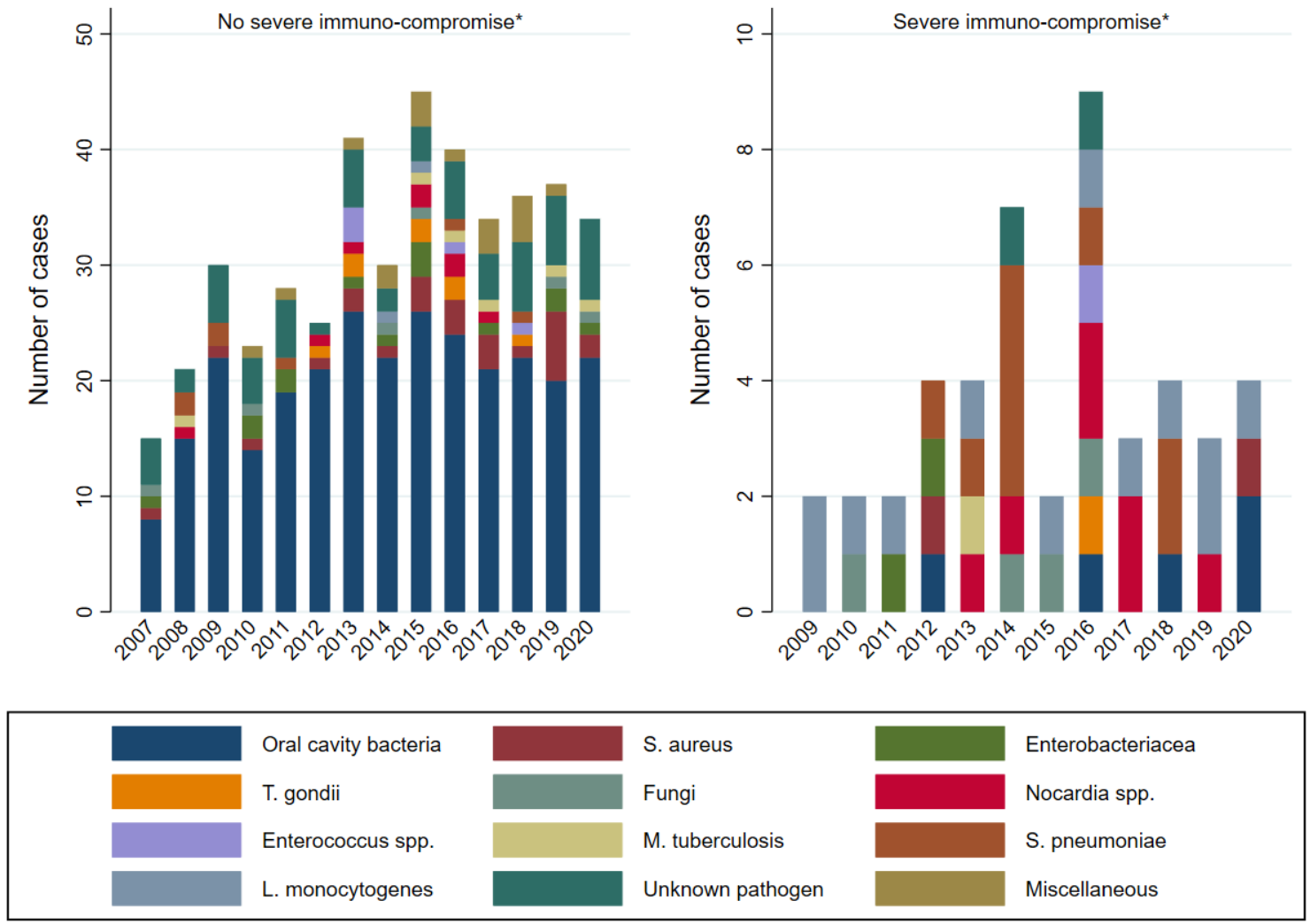
Microbiology (2)

Causative pathogens among 485 adults hospitalized with brain abscess in Denmark from 2007 through 2020



Bodilsen J et al. Brain 2022

Microbiology (3)



*Severe immune-compromise was defined as solid organ transplant recipients, haematological malignancies, or immune-suppressive treatment. Please note differences in y-axis. Adopted with permission from Bodilsen et al, Brain, 2020, https://doi.org/10.1093/brain/awac312.

Microbiology - Summary

Immunocompetent

Source	Pathogens
Ear, nose and throat - Otitis - Mastoiditis - Paranasal sinusitis	Oral streptococci Strict anaerobes - *Prevotella* sp. - *Bacteroides* sp. *Enterobacterales*
Dental infections	Polymicrobial Oral streptococci Strict anaerobes *Actinomycetes*
Trauma / Neurosurgery	Staphylococci (primarily *S. aureus*) Streptococci *Enterobacterales*
Cardiovascular	*S. aureus* Streptococci

Severely immunocompromised

Immunodepression	Pathogens
HIV	**Toxoplasmosis** Tuberculosis Cryptococcosis
Haematological malignancies	***Aspergillus* sp.** Nocardiosis Listeriosis *Mucorales* sp.
Solid organ transplant	**Nocardiosis** *Aspergillus* sp. Listeriosis Toxoplasmosis
Immunosuppresive agents (including corticosteroids)	**Listeriosis** **Nocardiosis** *Aspergillus* sp.

Tattevin P et al. ECCMID 2023

Antibiothérapie

Quand ?

Rapidement **(<24 h)**, si possible après ponction

NB. Ne pas attendre si altération conscience, sepsis …..

Désescalade ?

Possible, si pathogène(s) identifié(s) & prélèvements fiables

Se méfier des anaérobies (fragiles, parfois 'ratés')

Durée ?

6 semaines si situation simple, évolution rapidement favorable

(4 semaines métronidazole: fragilité anaérobies + neuropathie)

Relai per os ? Essai Européen en cours = ORAL

Seulement avec les bonnes molécules (absorption/diffusion SNC)

Rifampicine, FQ, TMP-SMX, Métronidazole, Linézolide

J Bodilsen et al. Clin Microbiol Infect 2024

Antibiothérapie initiale

PATIENT IMMUNOCOMPETENT ou 'peu immunodéprimé'

Infection « communautaire » (contiguïté / orig. indéterminée)
Céfotaxime dose de charge puis IVSE 12 g/j ou ceftriaxone 4 g/j
+ Métronidazole : 500 mg x 3/j

Infection post-opératoire
Méropénème : 2 g x 3 / jour IVL
(ou céfépime ou ceftazidime)

+ Linézolide 600 mg x 3/j
(ou vancomycine, dose de charge puis IVSE fortes doses)

J Bodilsen et al. Clin Microbiol Infect 2024

Antibiothérapie initiale

PATIENT SEVEREMENT IMMUNODEPRIME

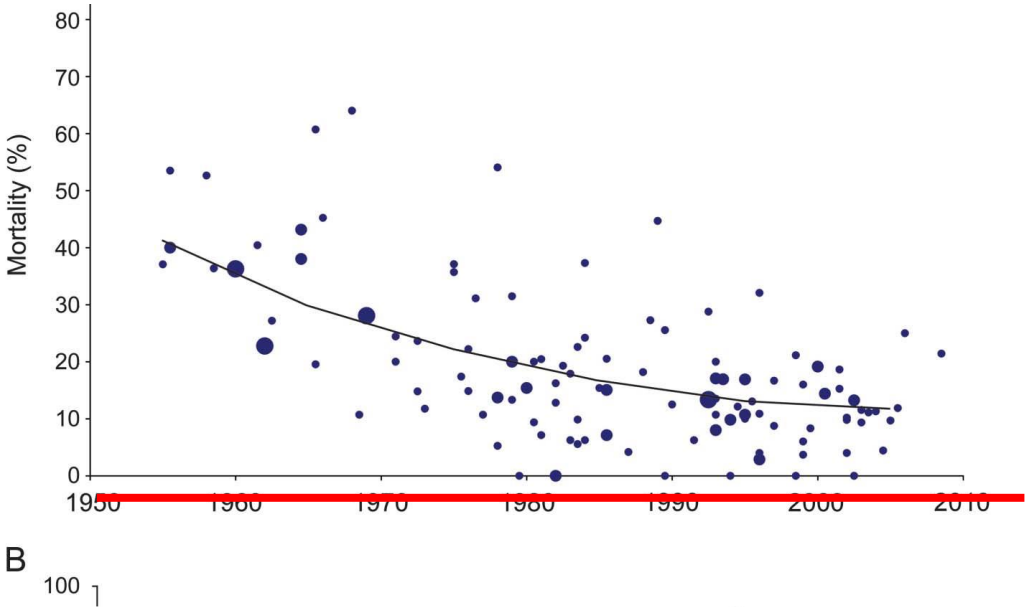
Si transplanté d'organe solide / hémopathie maligne :
- Cotrimoxazole fortes doses (*Nocardia, toxo, etc…*)
- Voriconazole (*Aspergillus*)

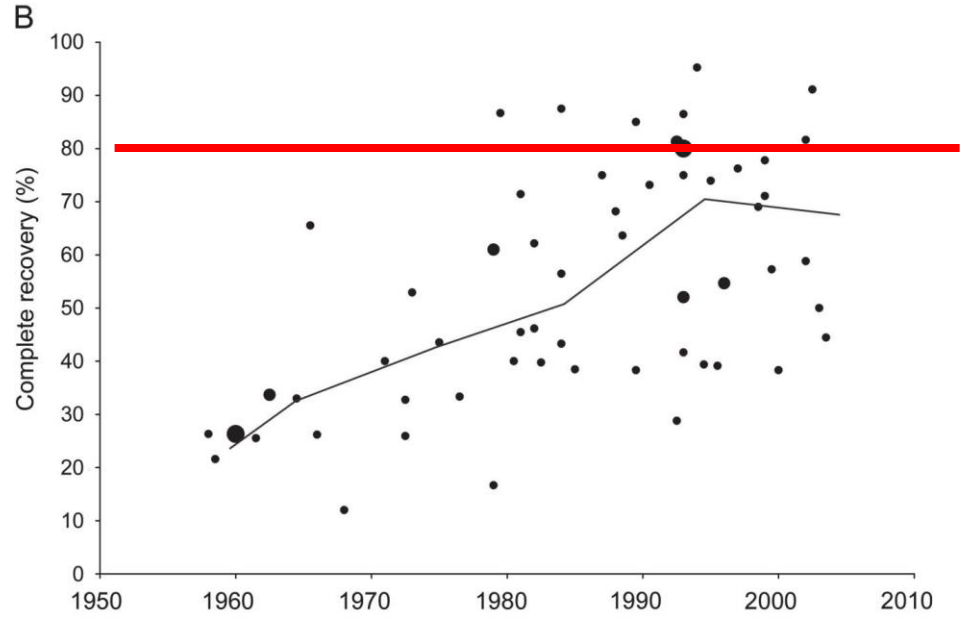
Si PVVIH et CD4<200/mm^3
- Cotrimoxazole fortes doses

Discuter anti-TB selon présentation
(clinique, imagerie, LCS)

J Bodilsen et al. Clin Microbiol Infect 2024

Evolution

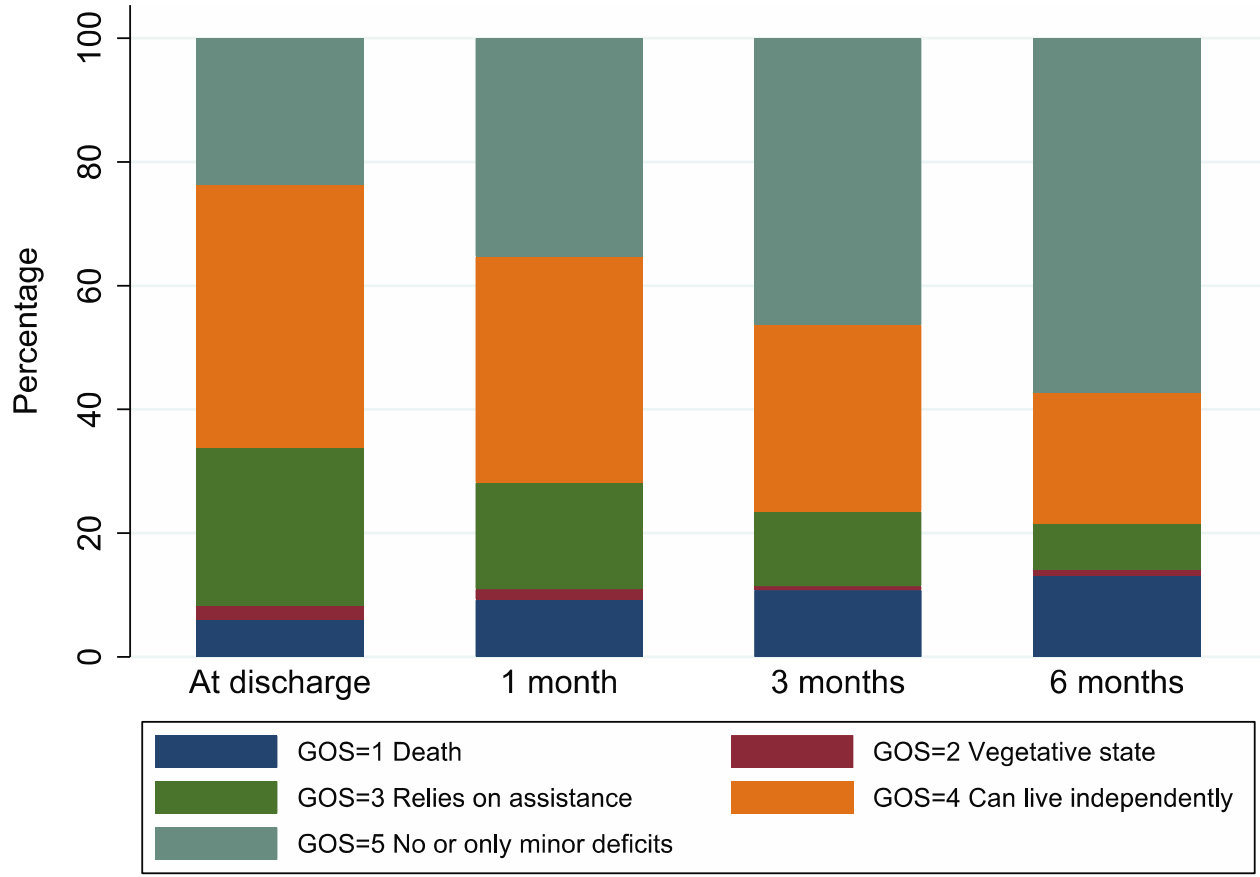




Brouwer MC et al. Neurology 2014

Evolution

Outcome according to duration of follow-up among 485 adults hospitalized with brain abscess in Denmark from 2007 through 2020.

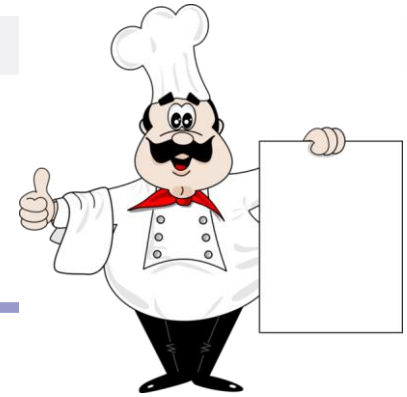


Bodilsen J et al. Brain 2022

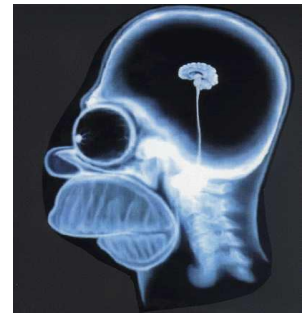
Brain abscess: Take-home messages

- **A rare disease** (1/100,000 inhabitants per year), **may be emerging**
- **Screening of predisposing condition is key**
  - **Source** (ENT or dental infection, hematogeneous, trauma/neurosurgery)
  - **Underlying disease** (immunosuppression, **HIV test for all !)**
- **Microbiology**
  - oral streptococci / *S. aureus* / strict anaerobes / *Enterobacterales*
- **Empirical treatment**
  - **High-dose IV 3rd-G cephalosporin + metronidazole if immunocompetent**
  - **High-dose cotrimoxazole + voriconazole if immunocompromised (deep)**

Au menu



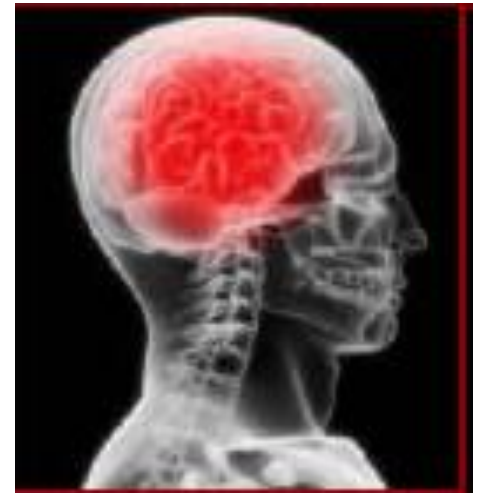
- **Méningites**
  - ✓ Méningite tuberculeuse
- **Abcès cérébraux**
  - ✓ Recommandations européennes ESCMID 2023
- **Encéphalites**
  - ✓ Leçons de la cohorte ENCEIF



Définition (*International Encephalitis Consortium*)

i) **Symptôme(s) et signe(s) neurologique(s) témoignant d'une dysfonction du système nerveux central**

- troubles du comportement (agitation, anxiété, opposition, agressivité, torpeur, syndrome psychiatrique aigu)
- troubles mnésiques antérogrades
- signes neurologiques focaux
- épilepsie
- troubles de la vigilance (de l'obnubilation au coma)



Sans étiologie alternative, durée > 24 h

&

ii) **Fièvre** (ou 'notion de'…)

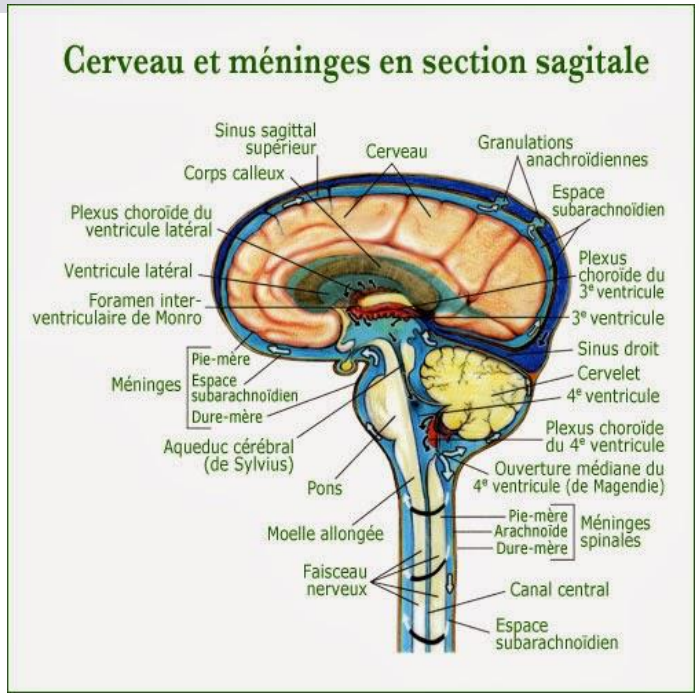
Venkatesan A et al. Clin Infect Dis 2013

Consensus

i) **Liquide cérébro-spinal (LCS)** ~~LCR~~

ii) **Analyse LCS:**

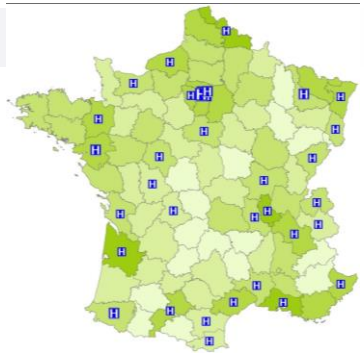
- méningite si > 4 éléments/mm^3
- hyperprotéinorachie si > 0,4 g/L
- hypoglycorachie si < 0,4 glycémie



Stahl JP et al. Infect Dis Now 2017

A Prospective Cohort Study to Identify Clinical, Biological and Imaging Features That Predict the Etiology of Acute Encephalitis

Marion Le Maréchal,[1,2] Alexandra Mailles,[2,3] Arnaud Seigneurin,[4,5] Pierre Tattevin,[2,6,©] Jean-Paul Stahl,[1,2] and Olivier Épaulard[1,2,7]; on behalf of the Scientific Committee and Investigators Group



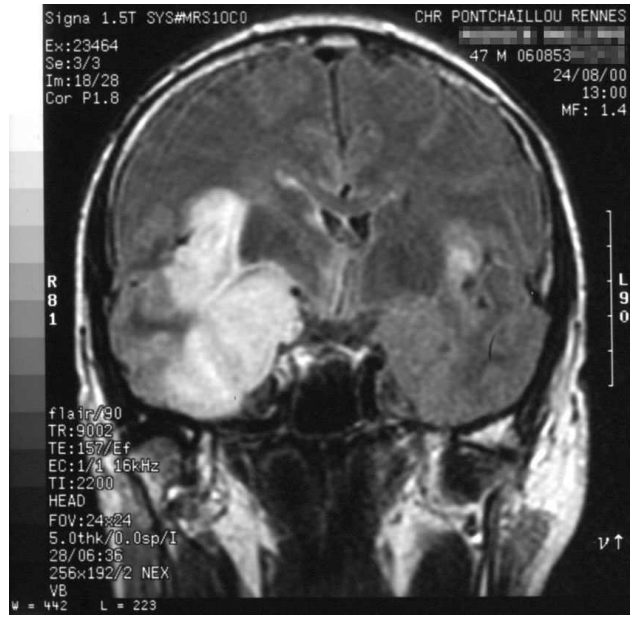
- **Cohorte Française, Encéphalites 'infectieuses', 2016-19 (n=494)**
  - France Métropolitaine, adultes
  - **Moindre proportion de cas sans étiologie (48% en 2007 => 34% en 2016-19)**
  - **Emergence des encéphalites à tiques (#3)**
  - **Traitement empirique reste aciclovir + amoxicilline**

Pathogen	N = 349	Proportion of the Whole Cohort (%)	Proportion Among Encephalitis With Documented Etiology (%) N = 232
Herpes simplex virus	88[a]	25.2	37.9
Varicella-zoster virus	39	11.2	16.8
Tick-borne encephalitis virus	22	6.3	9.5
Listeria monocytogenes	19	5.4	8.2

Le Maréchal M et al. Clin Infect Dis 2021

Présentation clinique classique (Enceif 2016-2019)

- Adulte, 30-70 ans, pas de comorbidité majeure (20%)
- Troubles du comportement d'aggravation progressive sur 48 h
- Céphalées, fièvre (apparition décalée de 24-48 h)
- **À l'admission** (médiane, H48 symptomes)
  - désorienté, troubles du comportement
  - fébricule
- **Imagerie cérébrale initiale**: 70% anormale
- **PL**
  - Lymphocytes 80/mm^3
  - Protéinorachie 0,9 g/L



Peut-on prédire l'étiologie infectieuse sur la clinique ?

A Prospective Cohort Study to Identify Clinical, Biological, and Imaging Features That Predict the Etiology of Acute Encephalitis

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1. Analyse multivariée**: probabilité HSV/VZV corrélée à**
   - lymphocytose LCS
   - lésions temporales
   - lésions hémorragiques

   Mais rien de suffisamment discriminant…

2. Pas de cluster evident pour les encéphalites non documentées

Le Maréchal M et al. Clin Infect Dis 2021

Encéphalites HSV & VZV: pas la même chose !

Characteristics, management and outcome of Herpes Simplex and Varicella-Zoster virus encephalitis: a multicentre prospective cohort study

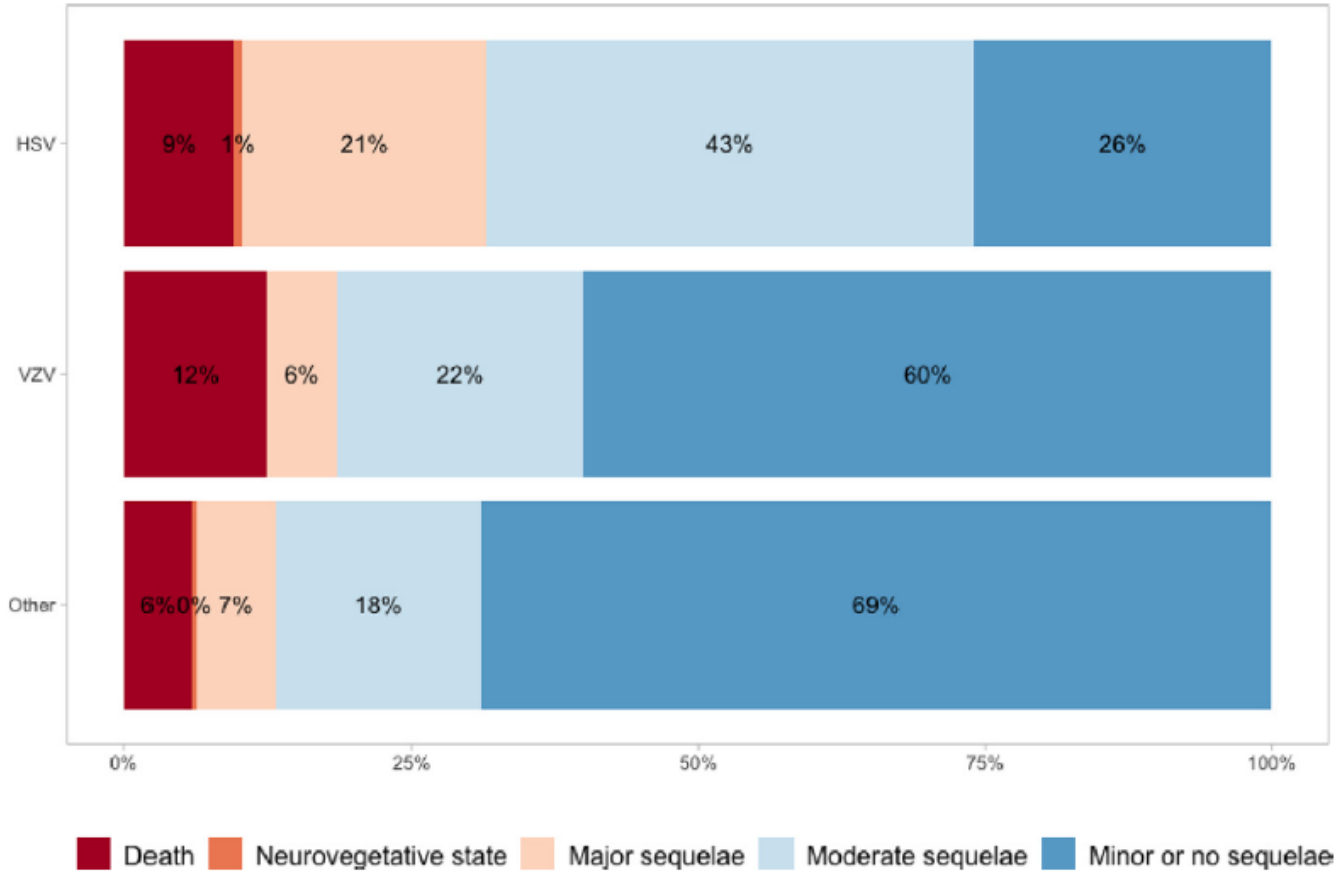
Léa Poussier [1,2], Alexandra Mailles [3], Pierre Tattevin [1,2], Jean-Paul Stahl [4], Pierre Fillâtre [2,5,*], the scientific committee and investigators group[*]

Encéphalites HSV (n=132) vs VZV (n=65) vs autres infections (n=297)

- ✓ encéphalites VZV + agées (75 vs 65 ans) et + IDP (23% vs 10%)
- ✓ mais moins graves que HSV à l'admission, avec un meilleur pronostic
- ✓ impact aciclovir précoce moins net pour VZV

Poussier L et al. Clin Microbiol Infect 2024

Encéphalites HSV & VZV: pas la même chose !



Distribution of Glasgow Outcome Scale at discharge according to infectious encephalitis etiology, ENCEIF cohort, France 2016–2019.

Poussier L et al. Clin Microbiol Infect 2024

Guidelines on the management of infectious encephalitis in adults

Recommandations de prise en charge des encéphalites infectieuses de l'adulte

J.P. Stahl [a,*,1], P. Azouvi [b], F. Bruneel [c], T. De Broucker [d], X. Duval [e], B. Fantin [f], N. Girard [g], J.L. Herrmann [h], J. Honnorat [i], M. Lecuit [j,k], A. Mailles [l,1], L. Martinez-Almoyna [m], P. Morand [n], L. Piroth [o], P. Tattevin [p,1], The reviewing group[2]

- **Traitement anti-infectieux empirique 'rapide' (dans les 6 h) :**
  - **Amoxicilline (200 mg/kg/j) + aciclovir (10 mg/kg x 3/j) ***
  - Pas de gentamicine

** 15 mg/kg/8 h si argument fort pour VZV (éruption, etc.)*

- **Traitements associés**
  - Neuroprotection (ACSOS)
  - Stéroïdes => selon étude Européenne Dex-Enceph =**> non !**
  - Anticonvulsivants => pas en prévention primaire

- **Lieu de la prise en charge initiale**
  - **Surveillance Continue au minimum**
  - Réanimation si GCS ≤ 13, > 1 convulsions, défaillance, agitation dangereuse

Stahl JP et al. Med Mal Infect 2017

Que disent les autres recos encéphalites ?

Recos	Traitement empirique
IDSA, 2008	aciclovir + follow meningitis guidelines if meningitis suspected
UK, 2012	aciclovir + follow meningitis guidelines if meningitis suspected
India, 2012	ceftriaxone + aciclovir **+ artesunate** (to be stopped if test neg)
Australia/NZ, 2015	aciclovir + follow meningitis guidelines if meningitis suspected
France, 2017	aciclovir **+ amoxicillin** + follow meningitis guidelines if meningitis suspected

Tunkel AR et al. Clin Infect Dis 2008
Solomon T et al. J Infect 2012
Kneen R et al. J Infect 2012
Sharma S et al. Indian Pediatrics 2012
Britton PN et al. Intern Med J 2015

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- **HSV**: aciclovir 10 mg/kg x 3/j, pendant 14 à 21 jours*

  ** 14 jours si adulte immunocompétent*
  21 jours si enfant et/ou immunodéprimé

- **VZV documenté**: 15 mg/kg x 3/j, pendant 14 jours

- **Listeriose documentée:**
  - amoxicilline (200 mg/kg/j en 4 à 6 perf, ou en continu) x 21 j **+ gentamicine** (5 mg/kg/j en une seule injection) x 5 j
  - Si allergie vraie aux betalactamines => cotrimoxazole

Stahl JP et al. Med Mal Infect 2017

Guidelines on the management of infectious encephalitis in adults

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- HSV éliminé si PCR LCS neg ?
  - **VPN de la PCR HSV > 98%** ***si LCS obtenu au moins 4 jours après le début des symptômes neurologiques***
  - Si LCS précoce (< J4 signes neuro) => nouvelle ponction lombaire

- **Sensibilité multiplex < test PCR HSV spécifique**

Stahl JP et al. Med Mal Infect 2017

Kathryn A. Kvam[a]
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Felicia C. Chow[c,d]
Ariane Soldatos[e]
Pierre Tattevin[f]
James Sejvar[g]
Alexandra Mailles[h]

Outcome and Sequelae of Infectious Encephalitis

Un patient qui se promène dans le couloir avec le sourire n'est pas forcément guéri !

1. **Dépistage actif des séquelles** (40% des encéphalites), évolutives
2. Organisation de leur traitement **(consultation neuropsychologue)**
3. **Préparation de l'entourage** (changement de personnalité, handicap…)

Kvam KK et al. J Clin Neurol 2024

Functional outcome after infectious encephalitis: a longitudinal multicentre prospective cohort study

Pierre Fillâtre [1,2,*], Alexandra Mailles [3], Jean Paul Stahl [4], Ronan Garlantezec [2,5], Marion Le Maréchal [4], Pierre Tattevin [2,6], on behalf of the scientific committee and investigators group

3 messages

1. **Processus évolutif, même après 6 mois**
2. **Pas vraiment prévisible**
3. **Tous peuvent bénéficier d'un suivi !**

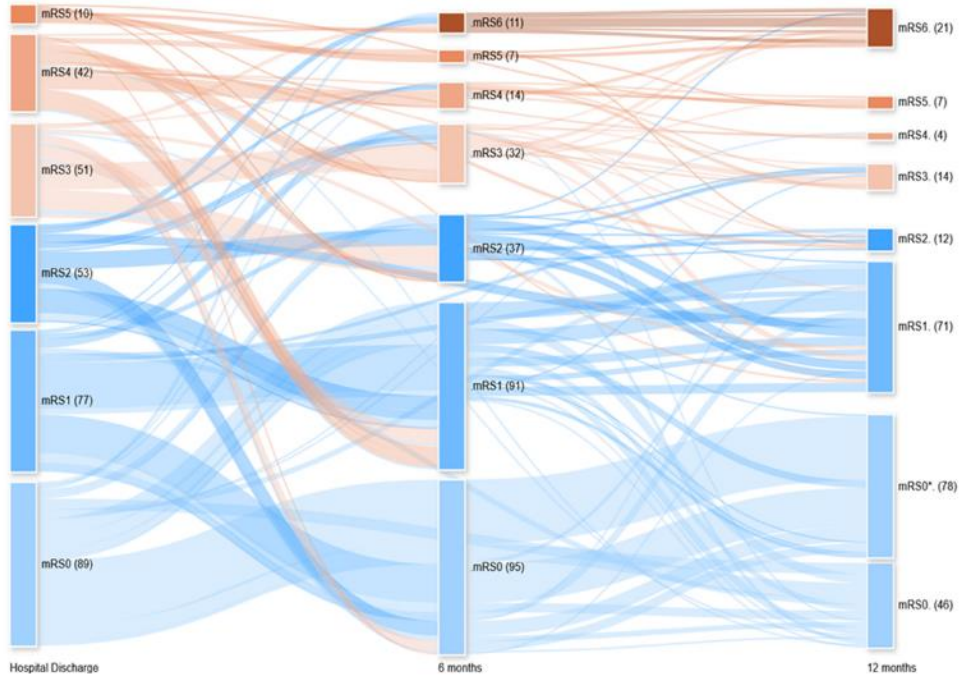
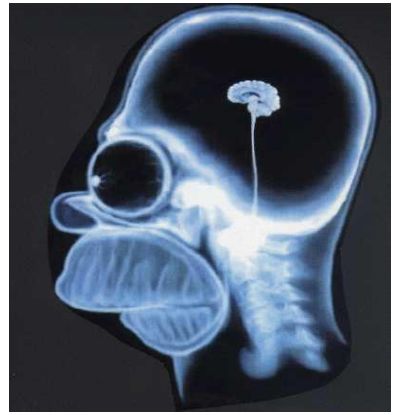


Fig. 1. Sankey diagram, with 862 mRS assessments at hospital discharge, at 6 and 12 months, among 322 patients. mRS, modified Rankin Scale, *As planned, functional outcome was attributed at mRS0 for the 12-month evaluation if patients were considered with full recovery at 6 months and therefore were not followed-up at 1 year.

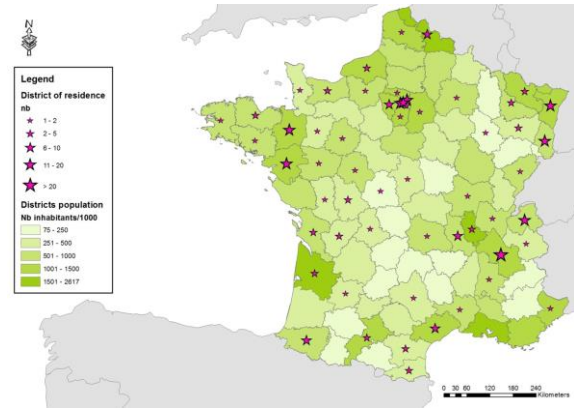
Fillâtre P et al. Clin Microbiol Infect 2024

Actualités des encéphalites, conclusions



1. **Signes aigus atteinte SNC puis fièvre, sur 24-48 h**
2. **Etiologie difficilement prévisible sans la microbio**
3. **Encéphalites HSV et VZV clairement distinctes**
4. **Traitement empirique** amox + **ACV (10 mg/kg/8 h), <6 h post admission**
5. **Refaire PL si PL#1 < J4 post symptomes et PCR HSV neg**
6. **Suivi actif post-encéphalite (neuropsy, entourage)**

1000 mercis aux investigateurs d'Enceif !!



[2] The investigators are Sophie Abgrall (Paris), Laurent Argaud (Lyon), Xavier Argemi (Strasbourg), Guillaume Baille (Lille), Aurélie Baldolli (Caen), Sarah Benghanem (Paris), Kevin Bertrand (Perpignan), Julien Biberon (Tours), Charlotte Biron (Nantes), Geneviève Blanchet-Fourcade (Narbonne), Mathieu Blot (Dijon), Elisabeth Bothelo-Nevers (Saint-Étienne), Frédéric Bourdain (Paris), David Boutoille (Nantes), Hélène Brasme (Paris), Fabrice Bruneel (Versailles), Cédric Bruel (Paris), Rodolphe Buzele (Saint-Brieuc), Etienne Canouï (Paris), Philippe Casenave (Libourne), Bernard Castan (Périgueux), Charles Cazanave (Bordeaux), Céline Cazorla (Saint-Étienne), Pascal Chavanet (Dijon), Catherine Chirouze (Besançon), Daniel Da Silva (Saint-Denis), Thomas De Broucker (Saint-Denis), Arnaud De La Blanchardière (Caen), Etienne De Montmollin (Saint-Denis), Eric Denes (Limoges), Colin Deschanvres (Nantes), Aurélien Dinh (Paris), Adrian Dumitrana (Perpignan), Olivier Epaulard (Grenoble), Pierre Fillatre (Saint-Brieuc), Emmanuel Forestier (Chambéry), Thibault Fraisse (Alès), Benjamin Gaborit (Nantes), Amandine Gagneux-Brunon (Saint-Étienne), Nicolas Gaillard (Montpellier), Arnaud Galbois (Quincy sous Sénart), Mathieu Godement (Paris), François Goehringer (Nancy), Pascale Goubin (Caen), Simon Gravier (Colmar), Valentin Greigert (Colmar), Isabelle Gueit (Rouen), Thomas Guimard (La Roche sur Yon), Carole Henry (Saint-Denis), Maxime Hentzien (Reims), Jean-Etienne Herbrecht (Strasbourg), Pierre Jaquet (Paris), Fanny Jommier (Paris), Snejana Jurici (Perpignan), Solene Kerneis (Paris), Morgane Le Bras (Nantes), Marion Le Maréchal (Grenoble), Gwenael Le Moal (Poitiers), Paul Le Turnier (Nantes),Raphael Lecomte (Nantes), Anne-Sophie Lecompte (Nantes), Stéphanie Lejeune (Annecy), François-Xavier Lescure (Paris), Olivier Lesieur (La Rochelle), Philippe Lesprit (Suresnes), Guillaume Louis (Metz), Christelle Lucas (Paris), Rafael Mahieu (Angers), Alain Makinson (Montpellier), Guillaune Marc (Saint-Nazaire), Alexandre Maria (Montpellier), Nathalie Marin (Paris), Guillaume Martin-Blondel (Toulouse), Martin Martinot (Colmar), Alexandre Mas (Montpellier), Philippe Mateu (Charleville-Mézière), Morgan Matt (Paris), Laurence Maulin (Aix-en-Provence), Frédéric Mechai (Paris), Eugénie Mutez (Lille), Jérémie Orain (Nantes), Anne Pachart (Colmar), Nathalie Pansu (Montpellier), Solene Patrat-Delon (Rennes), Patricia Pavese (Grenoble), Hélène Pellerin (La Roche-sur-Yon), Véronique Pelonde-Erimée (Fort-de-France), Isabelle Pierre (Grenoble), Emilie Piet (Annecy), Diane Ponscarme (Paris), Dimitri Psimaras (Paris), Mathilde Puges (Bordeaux), Mathilde Reveillon-Istin (Le Havre), Sylvain Rheims (Lyon), Aurélie Richard-Mornas (Lyon), Vincent Roubeau (Paris), Yvon Ruch (Strasbourg), Isabelle Runge (Orléans), Romain Sonneville (Paris), Jean-Paul Stahl (Grenoble), Pierre Tattevin (Rennes), Tomas Chroboczek (Villefranche), Jean-Marie Turmel (Fort-de-France), Isabelle Tyvaert (Nancy), Marc-Olivier Vareil (Bayonne), Magalie Vidal-Roux (Clermont-Ferrand), Virginie Vitrat (Annecy), Adrien Wang (Suresnes), Heidi Wille (Bayonne), Mathieu Zuber (Paris).

Messages ‘clés’

La gravité des infections du système nerveux central

1. Pronostic vital (5-30% mortalité)
2. Pronostic fonctionnel (séquelles variables, liées à la **qualité de la prise en charge**)

Diagnostic précoce difficile (1 signe ‘infectieux’ + 1 signe ‘lésion SNC’)

Trois entités distinctes (agent infectieux et physiopatho. différentes)

1. Abcès cérébraux (pathogènes variables, selon source & terrain), délai ttt < 24 h
2. Méningo-encéphalites (HSV & VZV en tête), délai ttt < 6 h
3. Méningites bactériennes (pneumo & méningo), délai ttt < 1 h

Méningites tuberculeuses : comment faire mieux ?