

Update from the National Reference Center on echinococcoses

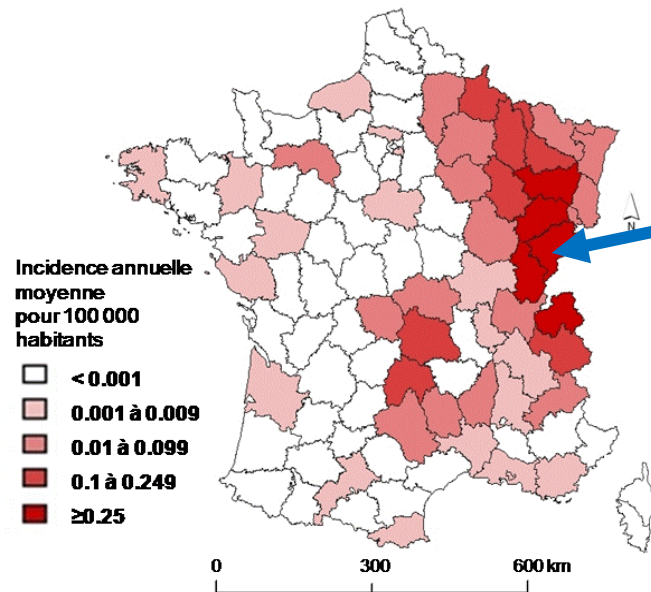
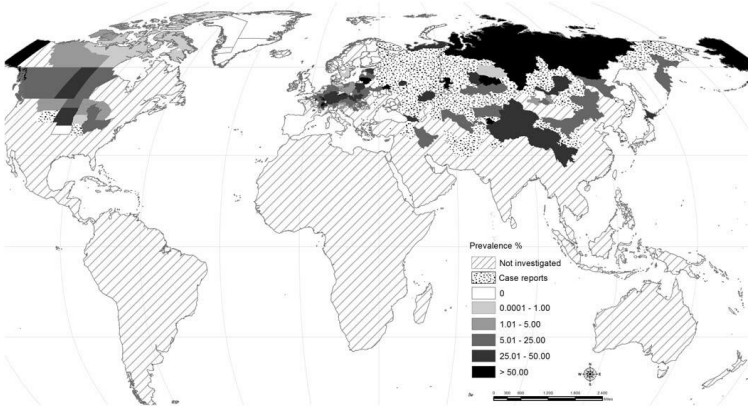
PR. LAURENCE MILLON

LABORATOIRE DE PARASITOLOGIE MYCOLOGIE, CENTRE NATIONAL DE RÉFÉRENCE ECHINOCOCCOSES

CENTRE HOSPITALIER UNIVERSITAIRE DE BESANÇON

UMR CNRS 6249, CHRONO ENVIRONNEMENT, UNIVERSITÉ MARIE ET LOUIS PASTEUR

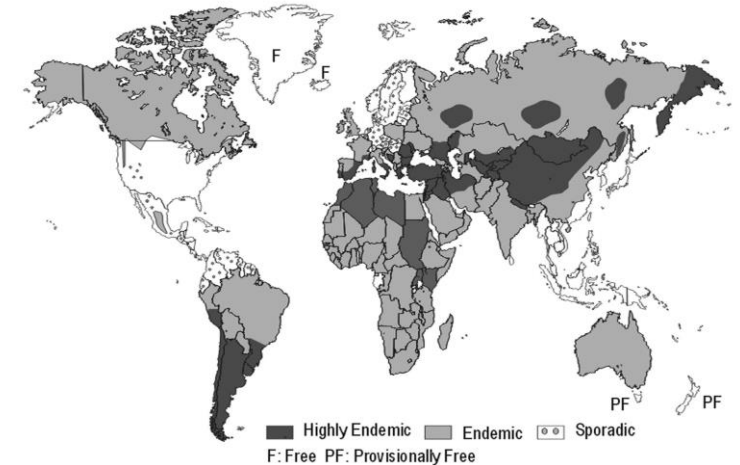
Alveolar Echinococcosis



1995: WHO Collaborating Centre
Prevention and treatment Echinococcosis

2012-2016 : *Centre National de Référence
Echinococcose Alvéolaire (EA)*

Cystic Echinococcosis



2017-2022 : Extension of the missions AE +CE
→ **CNR Echinococcoses**

2023 -2027 : renewal



CNR Echinococcoses

Missions of the National Reference Centre

AE and CE

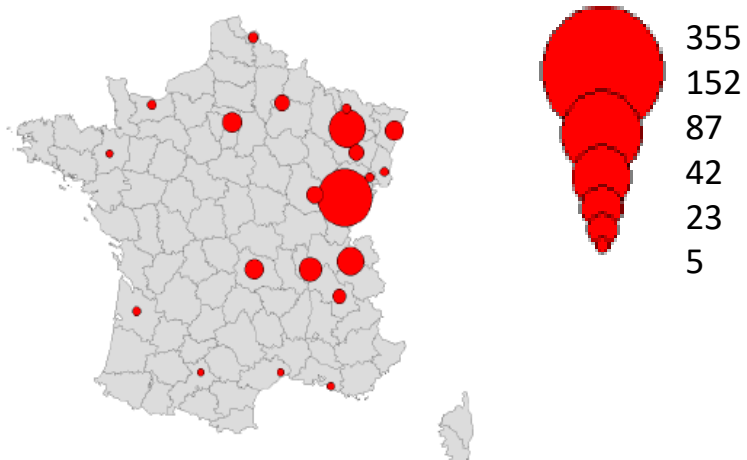
- Epidemiological surveillance
- Clinical expertise / Medical and therapeutic advices
- Biological expertise
- Research and development

Epidemiological surveillance

- Voluntary reporting through health professional network
(physicians and medical biologists involved in diagnosis and care)

AE : FrancEchino network

(371 participants)

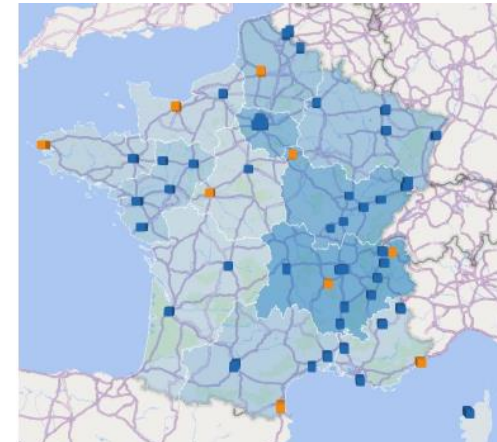


Number of AE cases reported per center
1982 -2024

CE : Ofrekys network

(Observatoire des Echinococcoses kystiques en France)

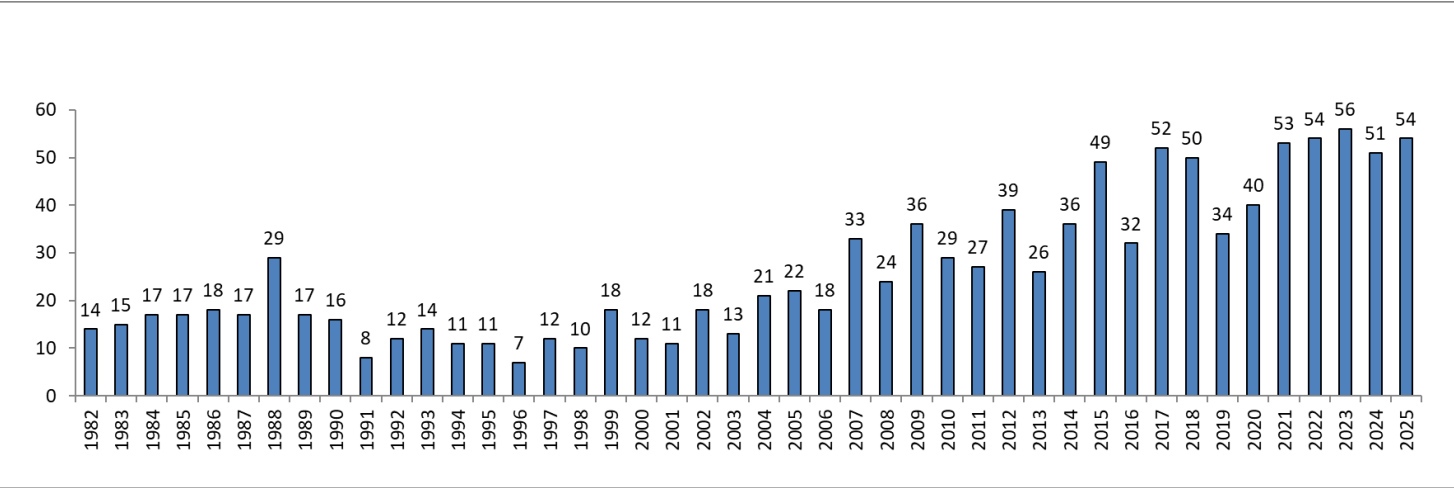
(175 participants)



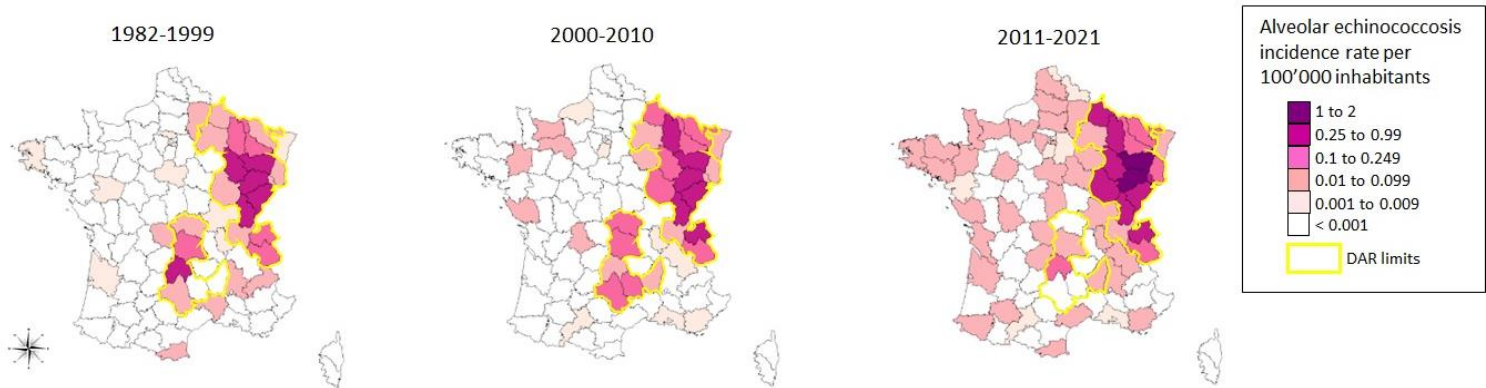
Centres reporting at least one case of CE
2017-2024

■ New participating centres in 2024

Epidemiological surveillance - AE

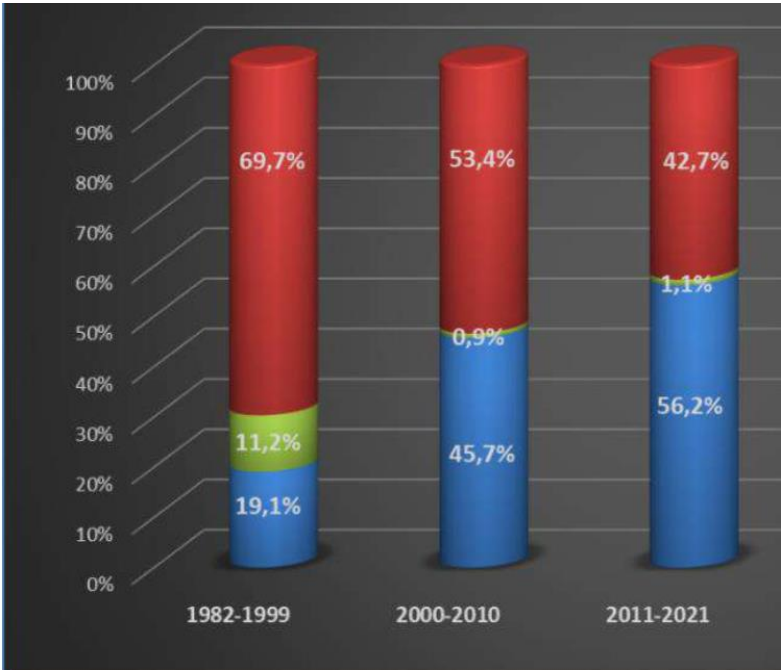


FrancEchino Registry : 1151 AE cases – 1982- 2025 (November 15)



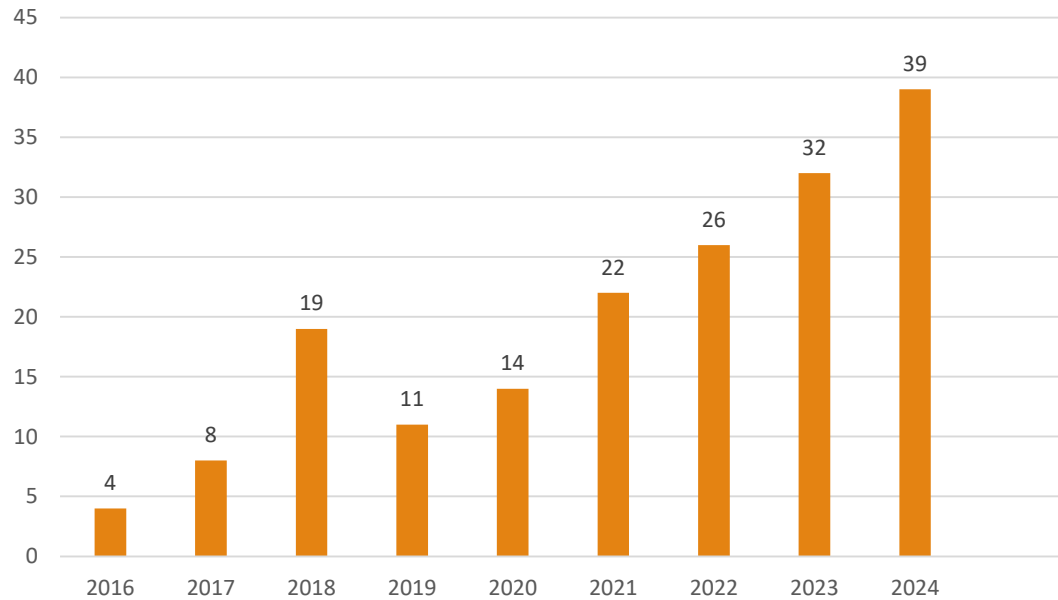
Circumstances at diagnosis

- symptomatic
- incidental
- screening

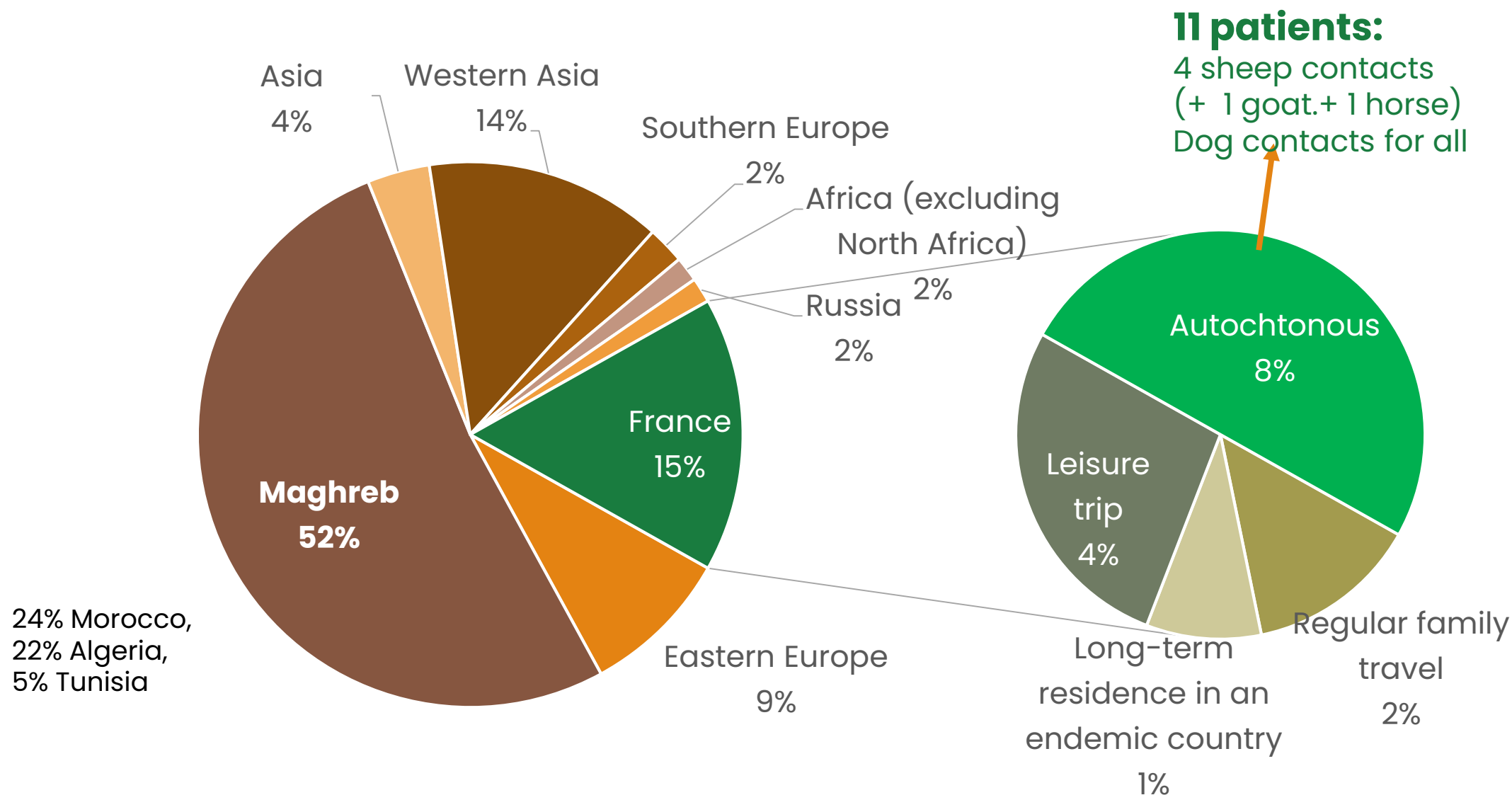


Epidemiological surveillance - CE

OFREKYS : 175 cases of CE reported (2016-2024)



Epidemiological surveillance - CE



Epidemiological surveillance

Joint activity : human/animal surveillance

- CE : Information/prevention in « Hautes Alpes »
 - Prevention among farmers and shepherds
 - Environnemental sampling (dog fèces, dog fur with cleaning wipe)



Feces

Positive Em

Negative Em

Epidemiological surveillance

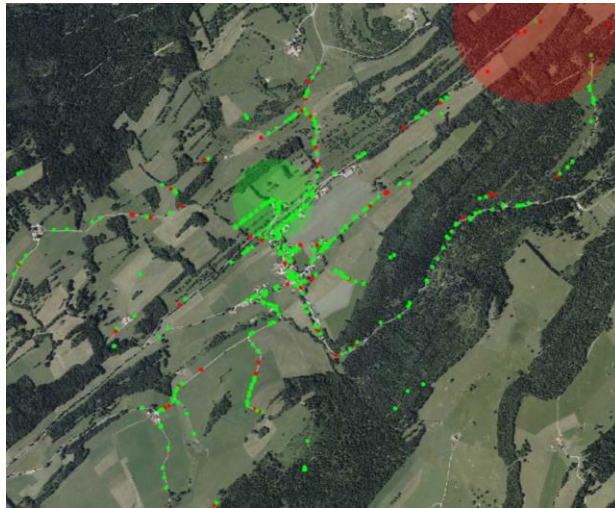


Joint activity : human/animal surveillance

- AE : individual monitoring of carnivores - study of parasite dissemination

Collection of feces

QPCR detection of *E. multilocularis*



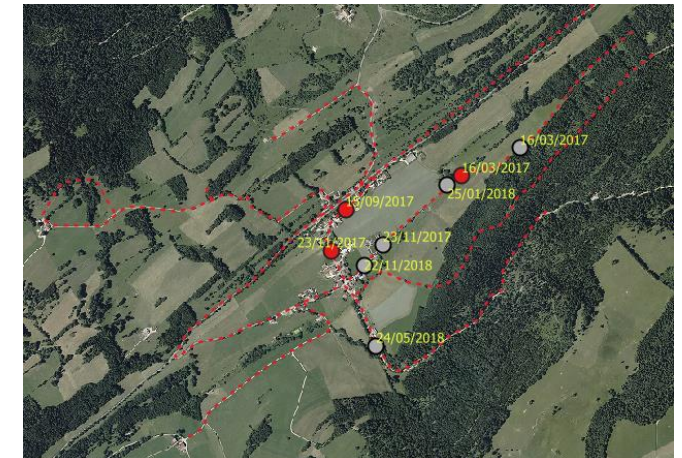
Distribution of positive Em feces

- Positive Em
- Negative Em

Genotyping of *E. multilocularis*
Genotyping of foxes and dogs



Génotype #1: F

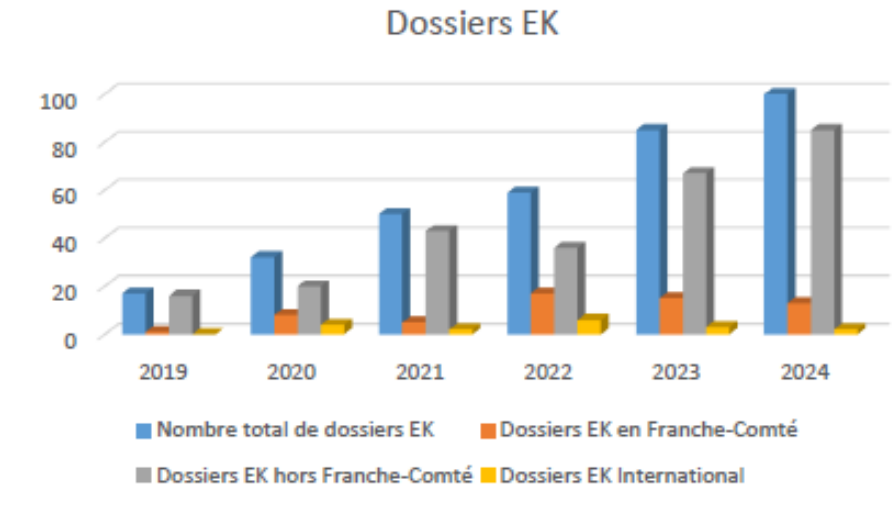
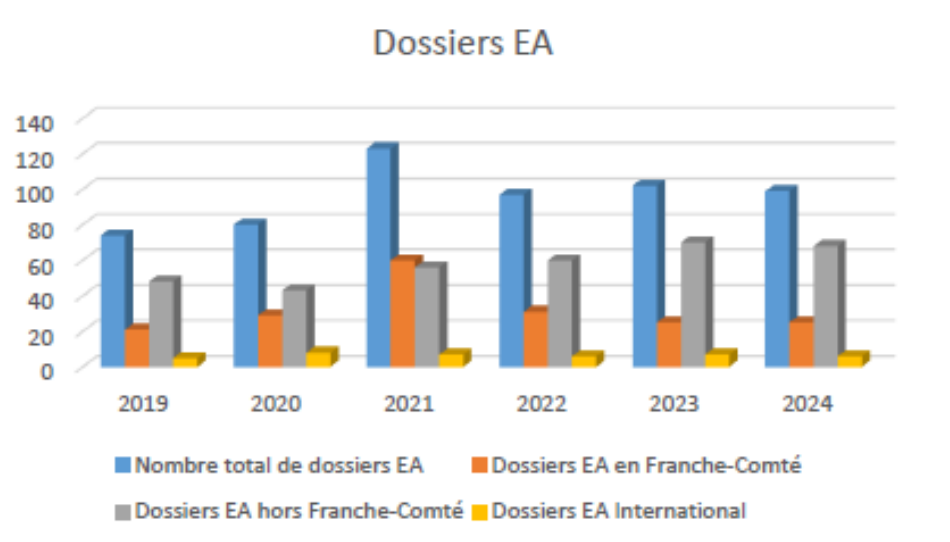


Clinical expertise

Medical expert opinion / Multi Disciplinary Team meeting (MDT)

46 MDT meetings in 2024 - 219 files reviewed

Every wednesday 1:30 to 3:00 pm –5 to 7 files per meeting - videoconference



Biological expertise

2024

Serology (n=821 – 55% for follow-up)

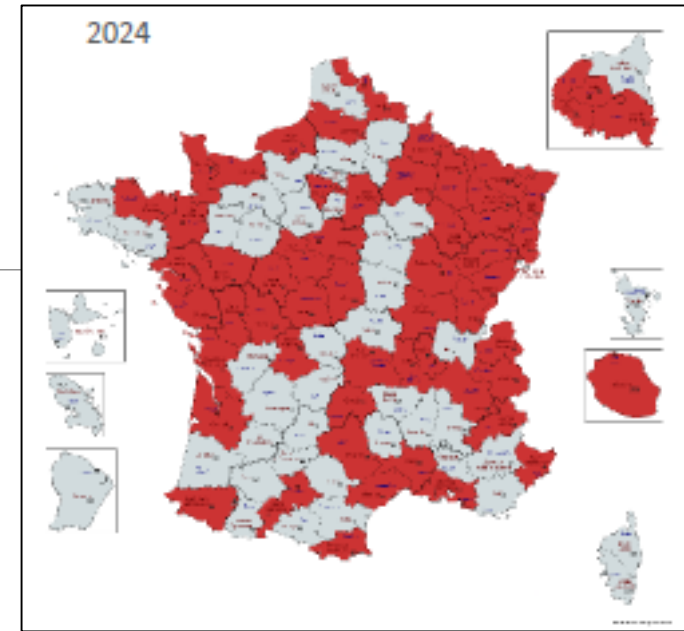
Dosage of albendazole sulfoxyde in plasma (n= 977 for 319 patients – 56 centres)

Dosage of mebendazole in plasma (n=75 for 24 patients)

Molecular diagnosis (*Echinococcus* PCR on biopsy, surgical specimen, FFPE) (n=118- 36 centres)

Genotyping

- EmSB microsatellite
- Mitogenome NGS analysis : 20 EA/21EK



Origine of ABZ/MBZ request

Research & development

Viability biomarkers / Recombinant antigens for serological follow-up CE and AE

(Ben Salah E et al. , J infect 2022; Barrera B et al., in preparation)

Detection/Quantification of *Echinococcus* DNA in serum/plasma

(« QPCR Echino » Project, on going)

Mitogenome analysis using Next Generation Sequencing

(Bohard L. et al., Int J parasitol 2023, Lallemand S. et al., In J Parasitol 2024; Duquet P. et al, in preparation)

Clinical research linked to NRC activities

- Report of two cases of primary subcutaneous echinococcosis (Bohard L et al., Plos NTD 2025)
- Correlation MRI /Em18 serology (Simon G et al. Parasite 2025)

2017-2024

- > 50 international publications
- > 50 communications/lectures

Acknowledgements

CNR Echinococcoses, CHU Besançon

Data managers : Florent Demonmerot (AE) Coralie Barrera (CE)

Biological expertise

Parasitologist : Anne Pauline Bellanger, Emeline Scherer, Laurence Millon

Pharmacologist : Damien Montange

Research & dev (molecular biology, biomarkers) : Jenny Knapp, Coralie Barrera

Clinical expertise

Hepatologist : Solange Bresson-Hadni, Carine Richou

Infectious diseases : Louis Bohard, Noemie Tissot, Catherine Chirouze

Radiologist : Paul Calame

Digestive surgeon : Celia Turco

Secretary
Jennifer Dugois

Thank you to all the healthcare professionals involved in the FrancEchino and Ofrekys network
And to all the patients for agreeing to participate in the CNR Echinococcosis registries