

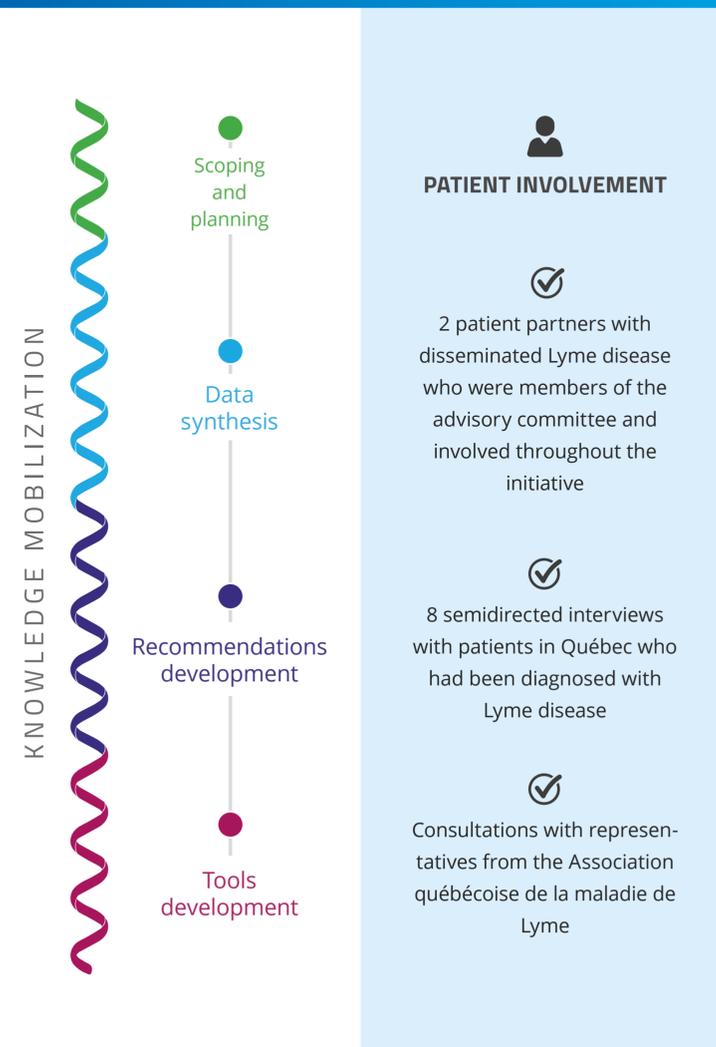
# How involve patients in the antibiotic prophylaxis decision after a tick bite

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## INTRODUCTION

- ▶ In Qu bec, Lyme disease is transmitted to humans by *Ixodes scapularis* ticks carrying the bacterium *Borrelia burgdorferi*.
- ▶ After a tick bite in certain geographical areas, single-dose doxycycline post-exposure prophylaxis (PEP) may be proposed to prevent Lyme disease, if certain criteria are met.
- ▶ The objective of this initiative was to review all the available scientific data on antibiotics studied as PEP, in order to revise the existing recommendations, if necessary, and to develop tools for clinicians.

## METHODOLOGY



## RESULTS

### SYSTEMATIC REVIEW OF PRIMARY STUDIES AND META-ANALYSIS

Intervention	Total number of patients	Frequency of manifestations of Lyme disease, n/N (%)		Effect calculated by INESSS Index (95% CI)
		Antibiotic	Placebo	
<b>PRIMARY STUDIES</b>				
Amoxicillin 750 mg/d x 10 d (Shapiro 1992)	365	0/192 (0.0)	2/173 (1.2)	—
Doxycycline 200 mg, single dose (Nadelman 2001)	482	1/235 (0.4)	8/247 (3.2)	ARR = -2.8% (-11.7; 6.1) NNT = 36 (19; 220)
Penicillin 1000 mg/d x 10 d (Costello 1989)	56	0/27 (0.0)	1/29 (3.4)	—
Penicillin or tetracycline 1000 mg/d x 10 d (Agre and Schwartz 1993)	179	0/89 (0.0)	1/90 (1.1)	—
<b>META-ANALYSIS OF PRIMARY STUDIES</b>				
See above	1082	1/543 (0.2)	12/539 (2.2)	ARR = -1.7 (-0.3; -0.004) NNT = depends on the baseline risk (see FIGURE 1)

TABLE 1. Efficacy of the antibiotics studied as PEP, based on different indicies  
ARR: absolute risk reduction; d: day; NNT: number needed to treat.

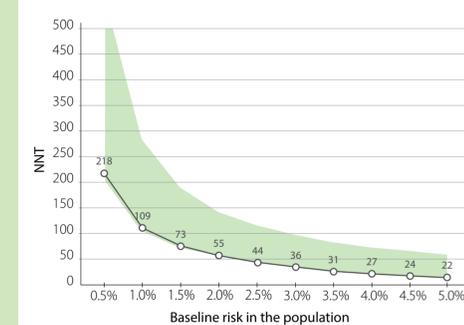


FIGURE 1. NNT calculated from the results of the meta-analysis according to the baseline risk in the population of developing Lyme disease

#### Conditions in Qu bec:

- ▶ Tick species not identified
- ▶ Carriage of *B. burgdorferi* generally > 20% in the areas targeted by PEP

Actual NNT associated with the use of PEP = ?



### SHARED DECISION MAKING PROCESS

#### 1 Explain Lyme disease and its symptoms to the patient

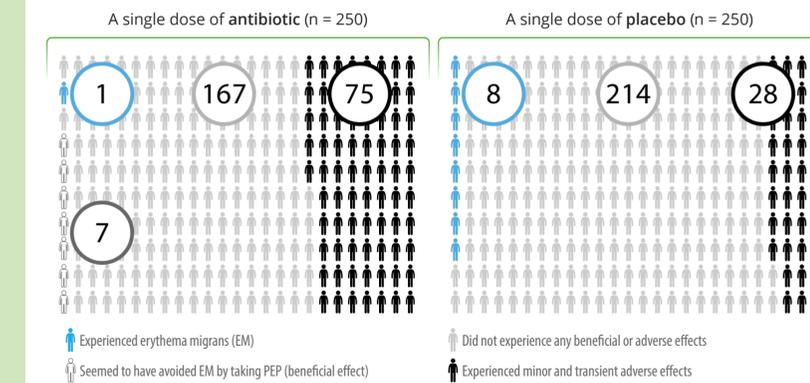
#### 2 Present the different options:

OPTION 1: Take one dose of antibiotic... OR OPTION 2: Do not take the antibiotic...  
...AND watch for any symptoms of Lyme disease

#### 3 Present the scientific data and their limitations

- a) On the risk of contracting Lyme disease in North America
- b) On the efficacy of single-dose doxycycline PEP

Of 500 people bitten by a black-legged tick and treated with:



#### It's important to tell your patient that:

- The results of the American study may not be reproduced in other contexts;
- There are no efficacy data on PEP in the under-12 population;
- There are no data on the efficacy of PEP in preventing symptoms other than erythema migrans.

#### 4 Discuss the pros and cons of each option with the patient

- | PROS   | + | - | CONS   |
|--|---|---|--|
| <ul style="list-style-type: none"> <li>▶ The patient might feel that he or she has taken the means at his or her disposal to prevent Lyme disease</li> <li>▶ The patient could feel that it is not worth it to take an antibiotic, given the low risk of contracting Lyme disease</li> </ul> |   |   | <ul style="list-style-type: none"> <li>▶ The patient could experience minor and transient adverse effects due to the antibiotic</li> <li>▶ The patient could harm his or her chances of preventing Lyme disease</li> </ul> |

#### 5 Check that the patient is ready to make a decision

## TOOLS

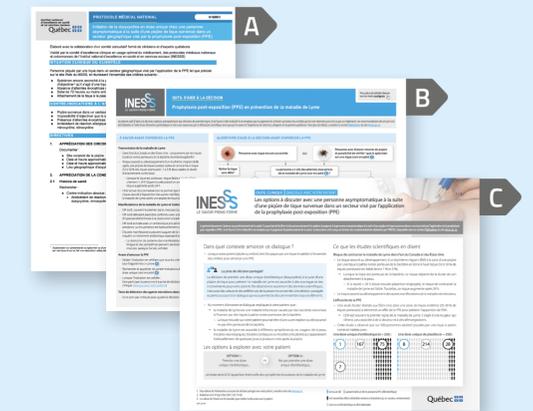


FIGURE 2. Tools for professionals

- A Quebec's national medical protocol containing a step-by-step description of the clinical procedure for initiating PEP;
- B Brief decision support tool;
- C Tool for the conversation between the health professional and the patient for the purpose of making an informed decision.

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## CONCLUSION

In a context of uncertainty regarding the actual efficacy and safety of PEP, the shared decision-making process enables the patient to make an informed decision that is in line with his or her preferences and values.

This initiative is part of INESSS's project on the diagnosis and treatment of Lyme disease.

#### REFERENCE

INESSS. Prophylaxie post-exposition   une piq re de tique par antibiotique pour pr venir la maladie de Lyme - Rapport en soutien aux outils de transfert des connaissances, au protocole m dical national et au mod le d'ordonnance collective. Report written by Ga lle Gernigon. Qu bec, QC: INESSS; 2019.