

# Infections complexes respiratoires :

## Faut-il des antibiotiques dans les infections respiratoires basses d'allure virale ?



Alain PUTOT



**HOPITAUX**  
DU PAYS DU  
MONT BLANC

Hôpitaux du Pays du Mont-Blanc

Déclaration de liens d'intérêt avec les industriels de santé  
en rapport avec le thème de la présentation (loi du 04/03/2002) :

L'orateur ne  
souhaite  
pas répondre

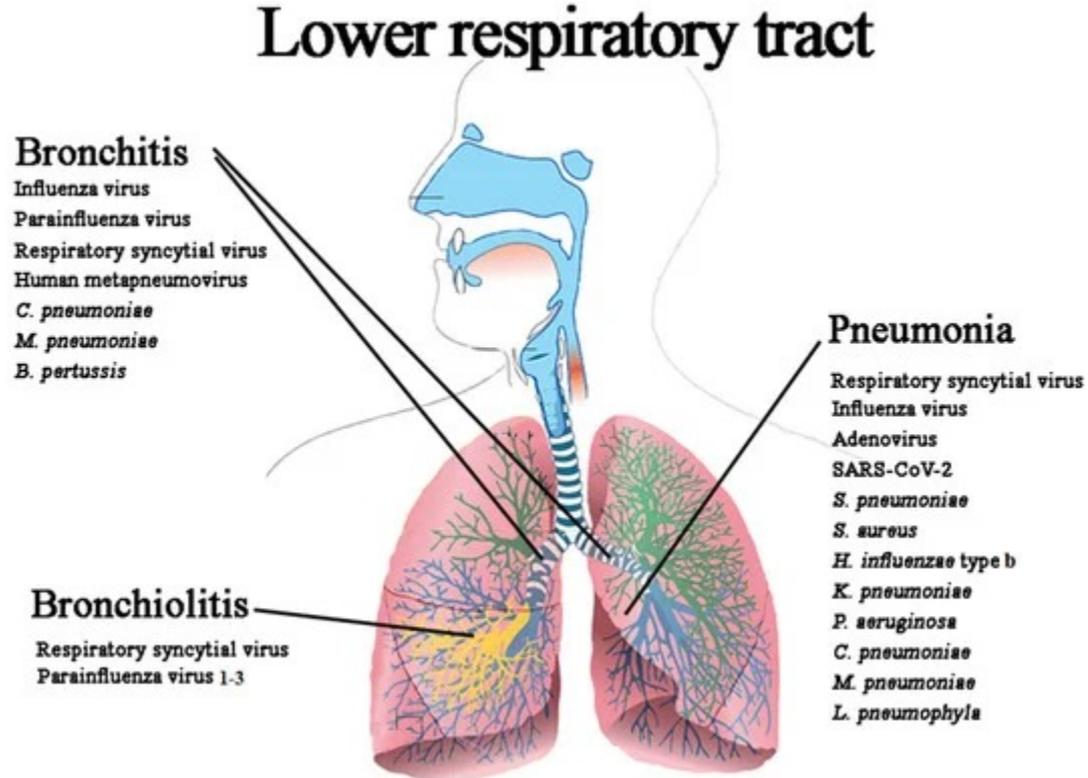
- **Intervenant** : PUTOT Alain
- **Titre** : Infections complexes respiratoires

- Consultant ou membre d'un conseil scientifique  OUI  NON
- Conférencier ou auteur/rédacteur rémunéré d'articles ou documents  OUI  NON
- Prise en charge de frais de voyage, d'hébergement ou d'inscription à des congrès ou autres manifestations  OUI  NON
- Investigateur principal d'une recherche ou d'une étude clinique  OUI  NON

Financements publics

# Infection respiratoire basse (IRB)

- ❖ IRB = sous glottique :
- ❖ Bronchite 72%
- ❖ EABPCO 15%
- ❖ PAC 10%
- ❖ Antibiotiques 95,6%



- ❖ Pourquoi traiter les IRB virales par antibiotiques ?
- ❖ Comment cibler les patients à ne pas traiter?

Des ATB dans les IRB virales...

Pour diminuer les symptômes (bronchite) ?

# Antibiotiques, bronchite et confort

## Analysis 6.1. Comparison 6 Clinically improved, Outcome 1 Number of participants reporting **no activity limitations or described as cured/globally improved.**

Study or subgroup	Antibiotic n/N	Placebo n/N	Risk Ratio		Weight	Risk Ratio M-H, Random, 95% CI
			M-H, Random, 95% CI			
Stott 1976	94/104	86/103		+	10.7%	1.08[0.97,1.2]
Williamson 1984	35/37	31/32		+	11.02%	0.98[0.88,1.08]
Franks 1984	14/19	17/29		+	2.69%	1.26[0.84,1.89]
Brickfield 1986	21/26	14/24		+	2.92%	1.38[0.94,2.04]
Dunlay 1987	19/20	20/23		+	7.33%	1.09[0.91,1.32]
Verheij 1994	64/73	55/72		+	8.61%	1.15[0.98,1.34]
Matthys 2000	158/171	136/172		+	11.48%	1.17[1.07,1.28]
Evans 2002	86/97	82/92		+	10.94%	0.99[0.9,1.1]
Nduba 2008	270/330	277/330		+	12.23%	0.97[0.91,1.04]
Llor 2013	107/137	123/143		+	10.51%	0.91[0.81,1.01]
Little 2013	539/908	436/899		+	11.56%	1.22[1.12,1.33]
<b>Total (95% CI)</b>	<b>1922</b>	<b>1919</b>		◆	<b>100%</b>	<b>1.07[0.99,1.15]</b>

Des ATB dans les IRB virales...

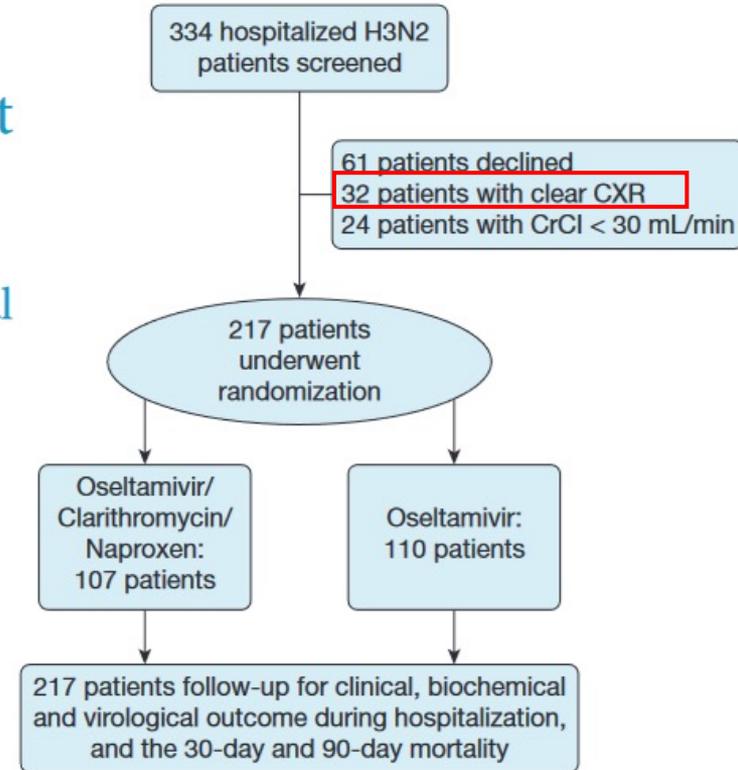
Pour améliorer la survie (pneumonie) ?

# Grippe et macrolides

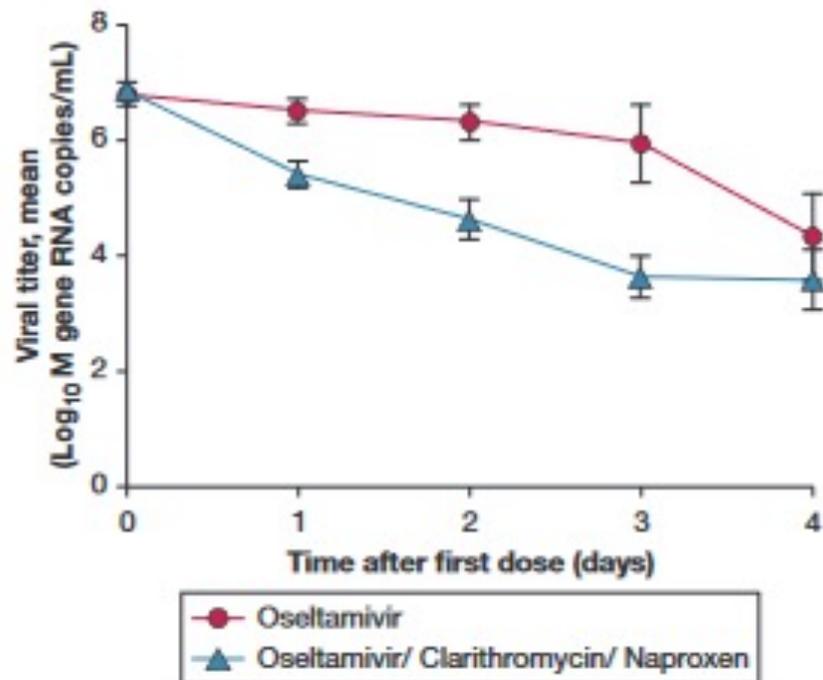
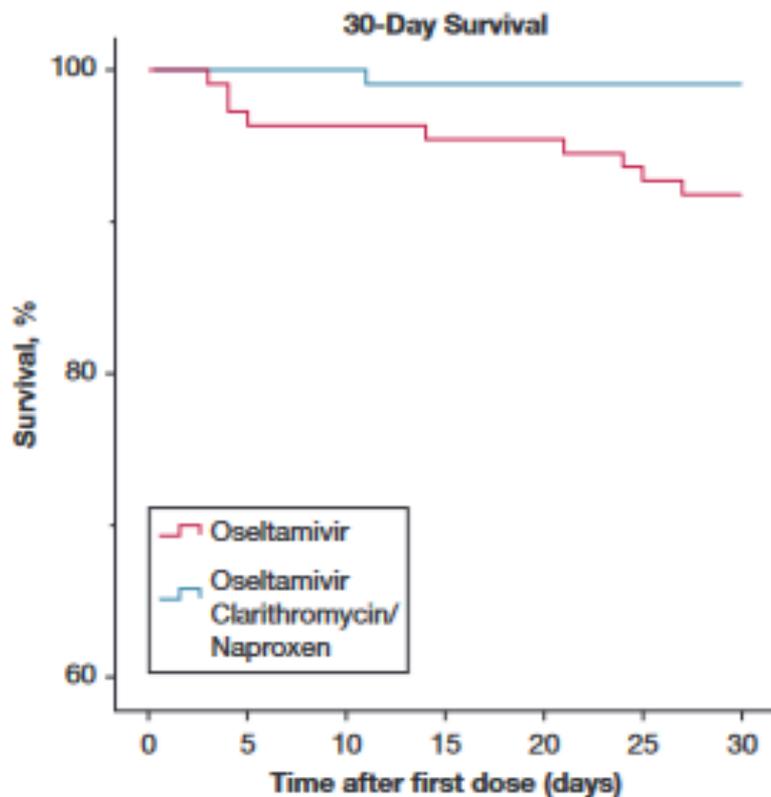
## Efficacy of Clarithromycin-Naproxen-Osetamivir Combination in the Treatment of Patients Hospitalized for Influenza A(H3N2) Infection

An Open-label Randomized, Controlled, Phase IIb/III Trial

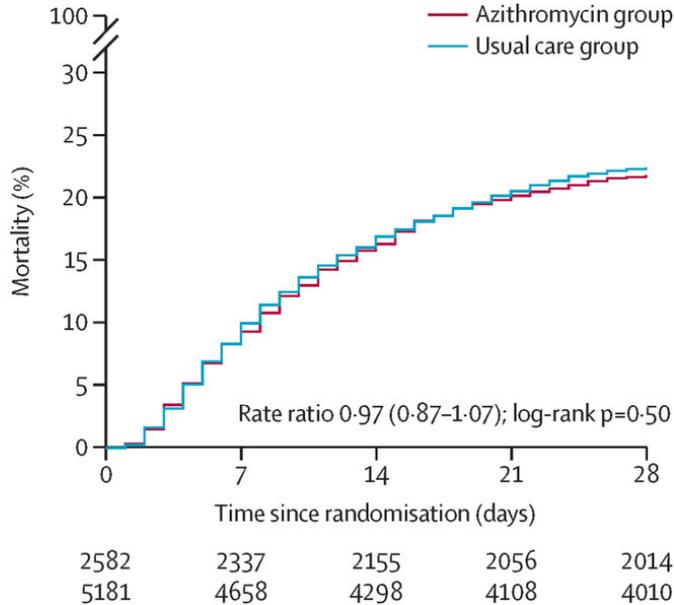
Age médian 81 ans  
30% institutionnalisés  
1/3 O<sub>2</sub>réquérant



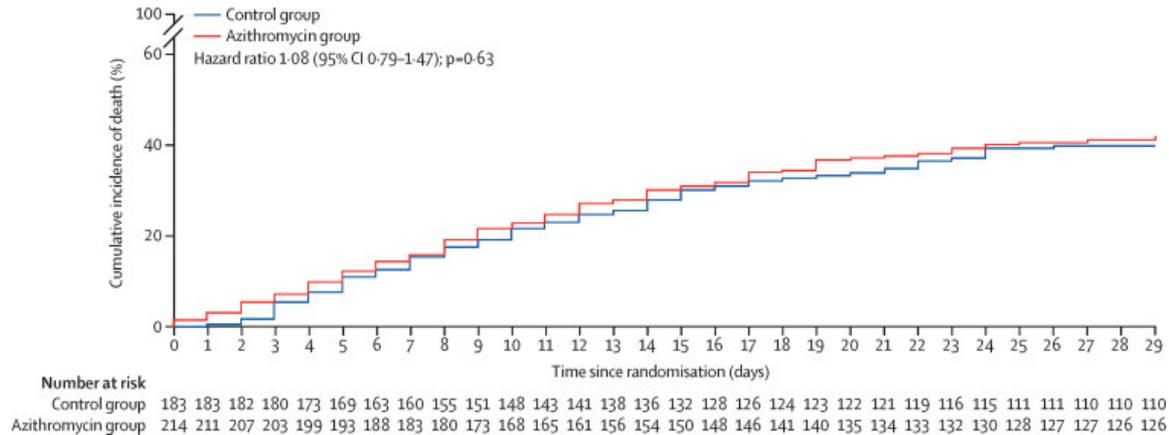
# Grippe et macrolides



# COVID et macrolides



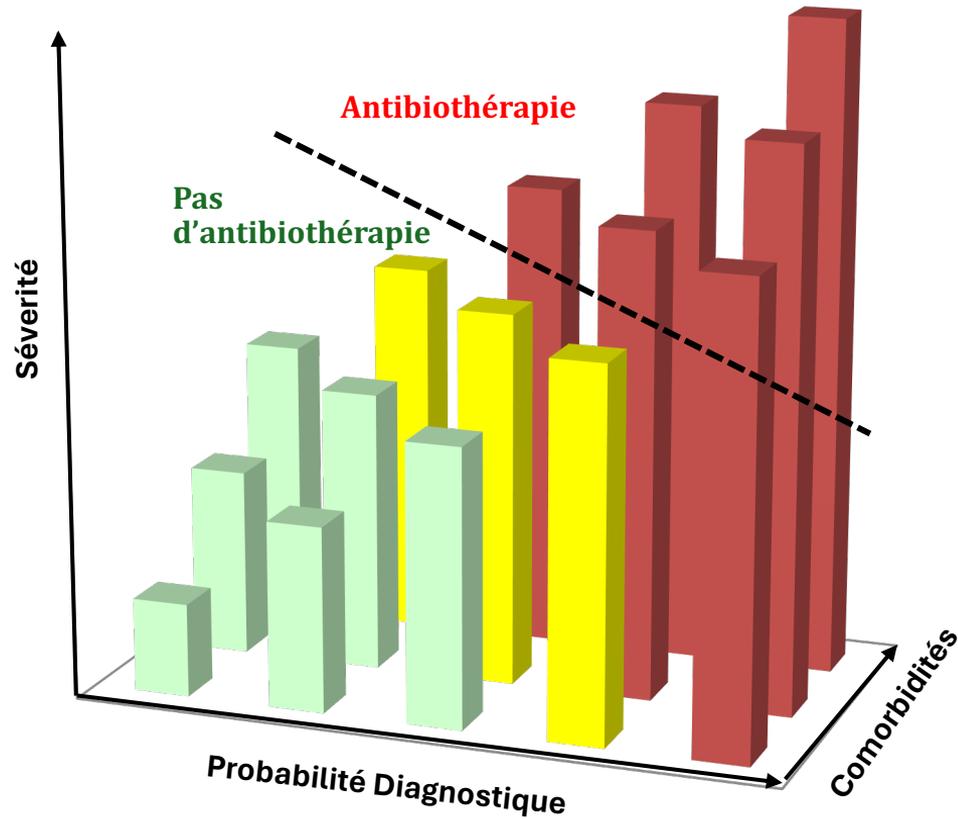
RECOVERY, Lancet 2021



COALLITION 2, Lancet 2021

Cibler les patients...

# Cibler les patients...



Cibler les patients...

Par la clinique ?

The value of signs and symptoms in differentiating between bacterial, viral and mixed aetiology in patients with community-acquired pneumonia

-étude prospective de PAC(n=408),  
âge médian 68 ans

-méthodes de diagnostic microbiologique exhaustives

-données cliniques systématiques

# The value of signs and symptoms in differentiating between bacterial, viral and mixed aetiology in patients with community-acquired pneumonia

	All patients (n=408)	No aetiology (n=145)	Bacterial aetiology (n=146)	Viral aetiology (n=52)	Bacterial and viral aetiology (n=65)	P value*
<b>Symptoms, n (%)</b>						
Fever	286 (70.1)	96 (66.2)	107 (73.3)	40 (76.9)	43 (66.2)	0.33
Altered mental status	64 (16.0)	16 (11.2)	26 (18.2)	10 (20.0)	12 (18.8)	0.27
Cough	259 (63.5)	83 (57.2)	93 (63.7)	42 (80.8)	41 (63.1)	0.027
Sputum	66 (16.2)	20 (13.8)	22 (15.1)	8 (15.4)	16 (24.6)	0.24
Headache	30 (7.4)	7 (4.8)	17 (11.6)	2 (3.8)	4 (6.2)	0.095
Chest pain	81 (19.9)	29 (20.0)	37 (25.3)	6 (11.5)	9 (13.8)	0.090
Dyspnoea	263 (64.5)	90 (62.1)	86 (58.9)	38 (73.1)	49 (75.4)	0.060
Gastrointestinal symptoms	38 (9.3)	12 (8.3)	17 (11.6)	3 (5.8)	6 (9.2)	0.59
Chills	66 (16.2)	22 (15.2)	25 (17.1)	8 (15.4)	11 (6.9)	0.96
General discomfort	89 (21.80)	30 (20.7)	34 (23.3)	11 (21.2)	14 (21.5)	0.95
<b>Clinical characteristics</b>						
Duration of symptoms (days), median (range)	3.0 (0-60)	4.0 (0-40)	3.0 (0-60)	3.5 (0-30)	3.0 (0-60)	0.81
Temperature (°C), mean ± SD	38.2 ± 1.19	38.1 ± 1.24	38.4 ± 1.19	38.1 ± 1.20	38.4 ± 1.05	0.085
Respiratory rate (min <sup>-1</sup> ), median (range)	23 (10-40)	23 (10-40)	23 (12-40)	23 (14-40)	23 (12-39)	0.94
Heart rate (min <sup>-1</sup> ), mean ± SD	101 ± 21.0	99 ± 20.5	103 ± 21.1	97 ± 21.4	103 ± 21.4	0.21
Sodium (mmol l <sup>-1</sup> ), mean ± SD	138 ± 6.27	138 ± 6.95	137 ± 4.83	137 ± 5.83	139 ± 7.60	0.10
CRP mg dl <sup>-1</sup> , median (range)	128 (0-690)	116 (0-528)	219 (0-658)	77.5 (0-341)	103 (12-690)	<0.0005
White blood cell count (× 10 <sup>3</sup> ml <sup>-1</sup> ), median (range)	13.2 (0.2-52.4)	12.7 (4.1-31.1)	13.9 (0.2-36.2)	12.7 (2.4-23.2)	14.3 (0.6-52.4)	0.062

# Atypies sémiologiques du sujet âgé



Sémiologie clinique  
aspécifique

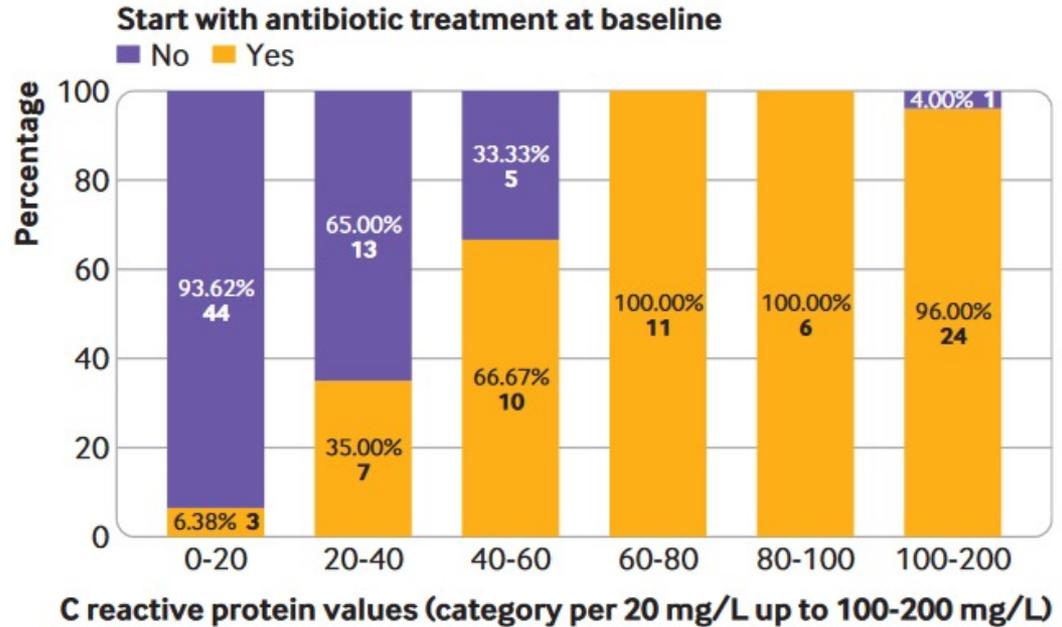
- Comorbidités
- immunosenescence

Cibler les patients...

Par la biologie ?

# Effect of C reactive protein point-of-care testing on antibiotic prescribing for lower respiratory tract infections in nursing home residents: cluster randomised controlled trial

Age 84 ans  
N = 241



# Effect of C reactive protein point-of-care testing on antibiotic prescribing for lower respiratory tract infections in nursing home residents: cluster randomised controlled trial

Outcome measure	Intervention group	Control group	OR (95% CI)	P value
<b>Primary outcome measure</b>				
No antibiotic prescription at initial consultation	73 (46.5)	14 (17.7)	Naïve model: 4.04 (2.09 to 7.78)	<0.001*
			Adjusted model: 4.26 (1.90 to 9.54)	<0.001*
			Final model: 4.93 (1.91 to 12.73)	0.001*
<b>Secondary outcome measures during follow-up period</b>				
Full recovery† at three weeks	121 (86.4)	69 (90.8)	0.49 (0.21 to 1.12)	0.09
Use of additional diagnostics‡ at one week and three weeks	50 (16.9)	32 (20.6)	0.72 (0.38 to 1.36)	0.31
Any changes in treatment policy‡ at one week and three weeks	36 (12.2)	26 (16.8)	0.53 (0.26 to 1.08)	0.08
Hospital admission§ at baseline, one week, or three weeks	10 (7.2)	5 (6.5)	1.12 (0.37 to 3.39)	0.85
All cause mortality§ at baseline, one week, or three weeks	5 (3.5)	1 (1.3)	2.76 (0.32 to 24.04)	0.36

# Effect of procalcitonin-guided antibiotic treatment on mortality in acute respiratory infections: a patient level meta-analysis

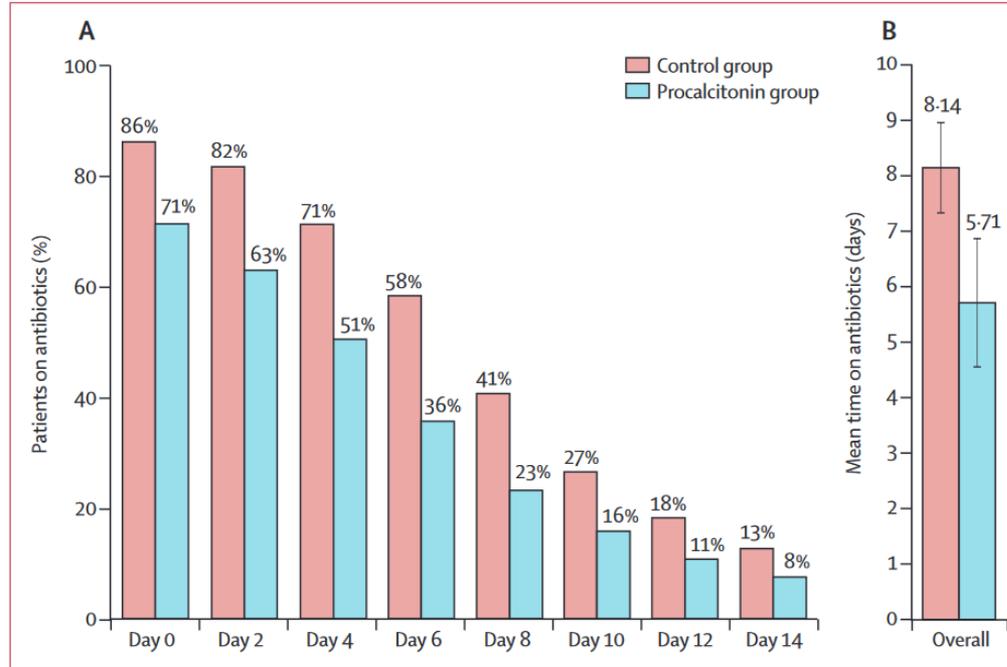


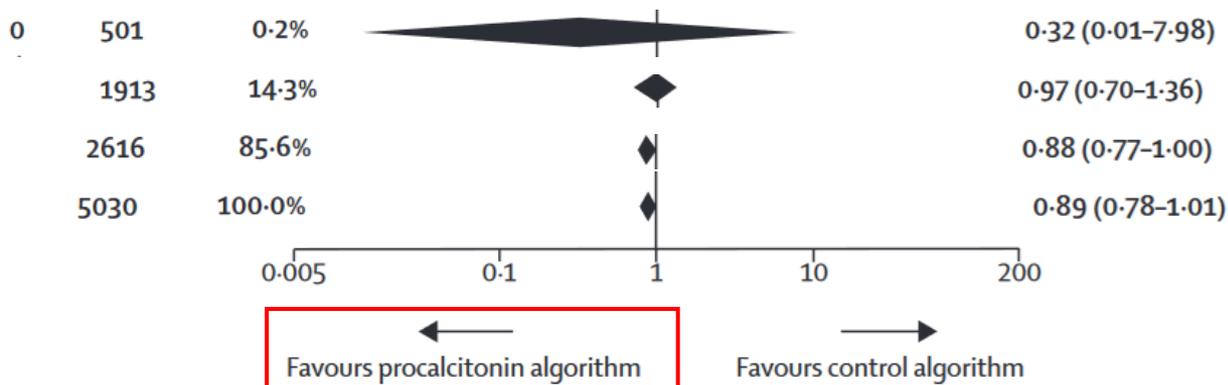
Figure 3: Antibiotic use

(A) Proportions of patients on antibiotics. (B) Mean duration of antibiotic use.

# Effect of procalcitonin-guided antibiotic treatment on mortality in acute respiratory infections: a patient level meta-analysis

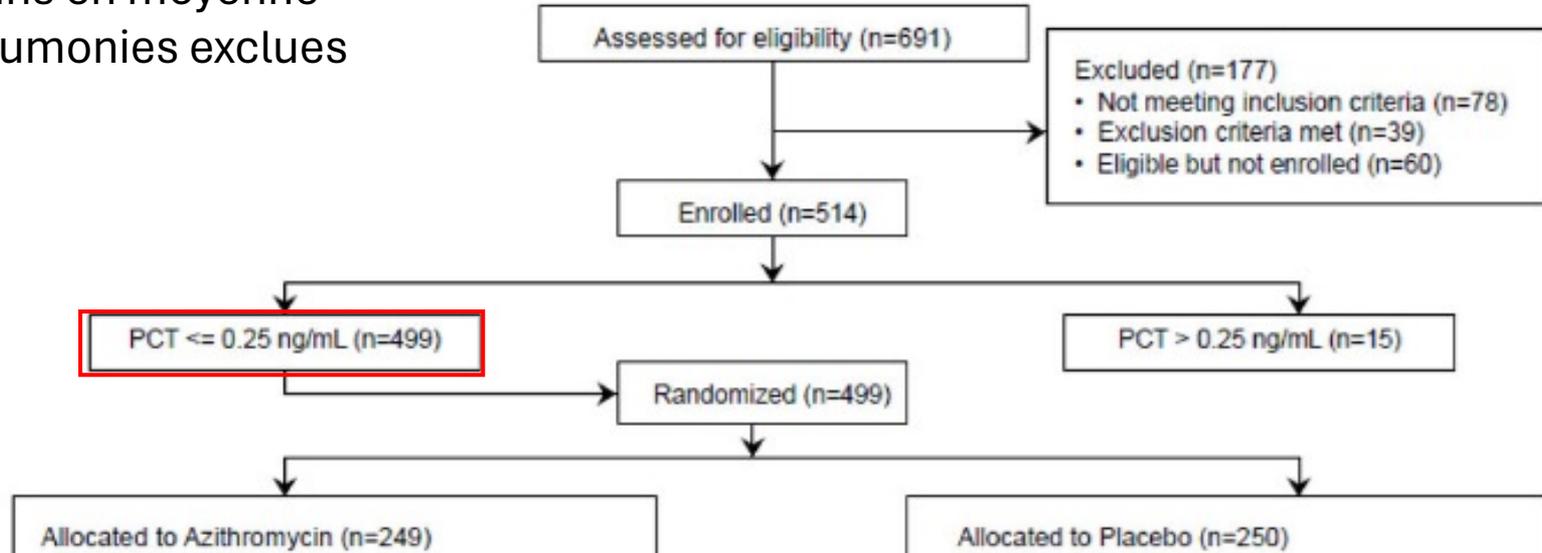
## Mortalité toute cause

Primary care trials	507
Emergency department trials	1892
<b>Intensive care unit trials</b>	<b>2617</b>
Total (95% CI)	5016



Efficacy and safety of azithromycin versus placebo to treat lower respiratory tract infections associated with low procalcitonin: a randomised, placebo-controlled, double-blind, non-inferiority trial

- Patients ambulatoires
- 52 ans en moyenne
- Pneumonies exclues



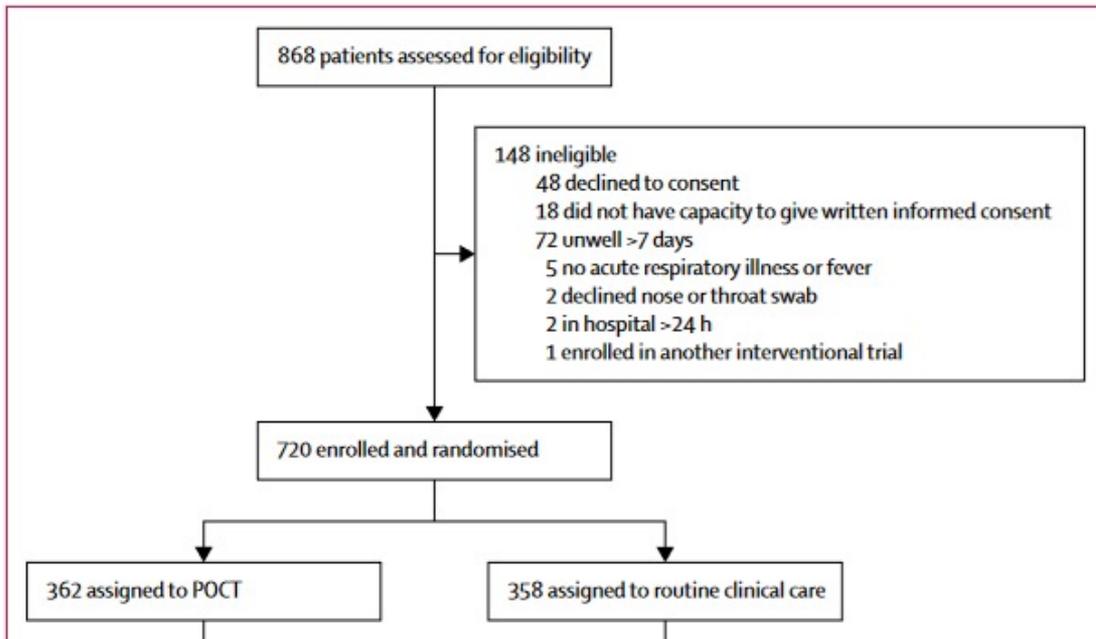
Efficacy and safety of azithromycin versus placebo to treat lower respiratory tract infections associated with low procalcitonin: a randomised, placebo-controlled, double-blind, non-inferiority trial

	Participants with clinical improvement	Between-group difference	Non-inferiority*
<b>Day 5</b>			
Intention-to-treat population			
Azithromycin group (n=249)	155 (69% [61 to 77])	..	..
Placebo group (n=250)	148 (63% [54 to 71])	-6% (-15 to 2)	No

Cibler les patients...

Par la microbiologie ?

# Routine molecular point-of-care testing for respiratory viruses in adults presenting to hospital with acute respiratory illness (ResPOC): a pragmatic, open-label, randomised controlled trial



	POCT (n=360)	Control (n=354)
Age (years)	63 (41-75)	62 (44-74)
Comorbidity		
Cardiovascular disease	132 (37%)	133 (38%)
Respiratory disease	213 (59%)	206 (58%)
Renal disease	20 (6%)	22 (6%)
Liver disease	7 (2%)	2 (1%)
Diabetes	48 (13%)	64 (18%)
Observations		
Temperature (°C)	36.9 (36.4-37.7)	37.0 (36.4-37.8)
Temperature ≥38°C	64 (18%)	78 (22%)
Pulse rate (bpm)	100 (85-110)	100 (84-110)
Respiratory rate (bpm)	23 (19-28)	22 (18-26)
O <sub>2</sub> saturations (%)	96 (94-98)	95 (93-97)
Supplementary O <sub>2</sub>	96 (27%)	76 (21%)
Final diagnosis		
Asthma	62 (17%)	57 (16%)
IECOPD	81 (23%)	83 (23%)
Pneumonia	94 (26%)	98 (28%)
Influenza-like illness/NPLRTI	76 (21%)	69 (19%)
Other†	47 (13%)	47 (13%)

Routine molecular point-of-care testing for respiratory viruses in adults presenting to hospital with acute respiratory illness (ResPOC): a pragmatic, open-label, randomised controlled trial

	POCT (n=360)	Control (n=354)	p value
Patients tested for viruses	360 (100%)	158 (45%)	
Patients with any virus detected	161 (45%)	52 (15%)	
Antibiotics given	301 (84%)	294 (83%)	0.96*
Single dose only	31/301 (10%)	10/294 (3%)	0.0010
Given for <48 h	50/301 (17%)	26/294 (9%)	0.0047
Duration (days)	7.2 (5.1)	7.7 (4.9)	0.17*

Cibler les patients...

Par l'imagerie ?

# Radio de thorax

**Table 2—Agreement on the Presence of a Radiographic Pulmonary Infiltrate by Two Staff Radiologists**

Radiographic Assessment (Radiologist 2)	Radiographic Assessment (Radiologist 1)			
	No	Possible	Probable	Definite
No, No. (%)	17 (6.0)*	19 (6.7)	5 (1.8)	0 (0.0)
Possible, No. (%)	7 (2.5)	21 (7.4)*	16 (5.7)	6 (2.1)
Probable, No. (%)	6 (2.1)	10 (3.5)	20 (7.1)*	15 (5.3)
Definite, No. (%)	4 (1.4)	11 (3.9)	20 (7.1)	105 (37.2)*

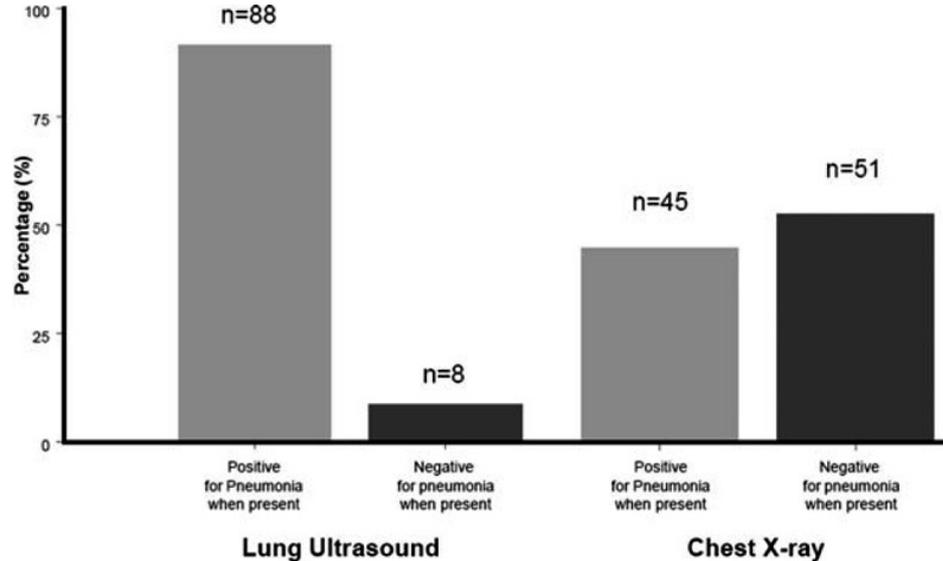
\*The total agreement rate between radiologists was 57.7%, representing the proportions of radiographs read as no (6.0% of total), possible (7.4%), probable (7.1%), and definite (37.2%) infiltrate by both reviewers. The corresponding kappa statistic was 0.38 (95% CI=0.31 to 0.46).

## Radio de thorax / Scanner

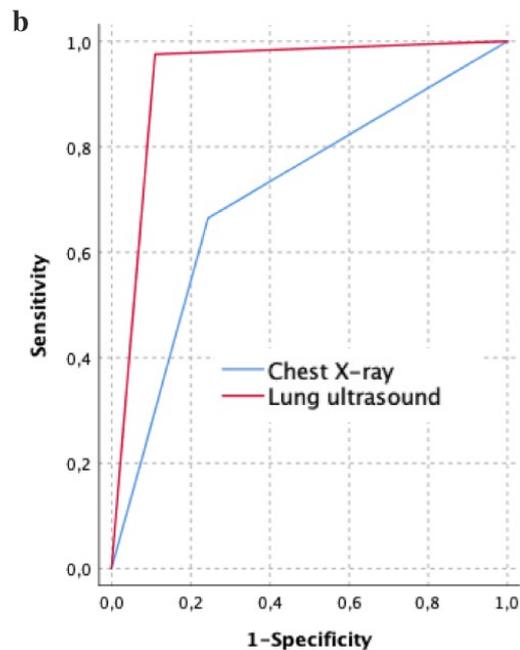
- ❖ Se 65% Spé 93%
- ❖ Y Esayag, Am J Med 2010
  
- ❖ Se 43%, Spé 93%
- ❖ WH Self, AJEM 2012

# Echographie

## Lung ultrasound and chest x-ray for detecting pneumonia in an acute geriatric ward



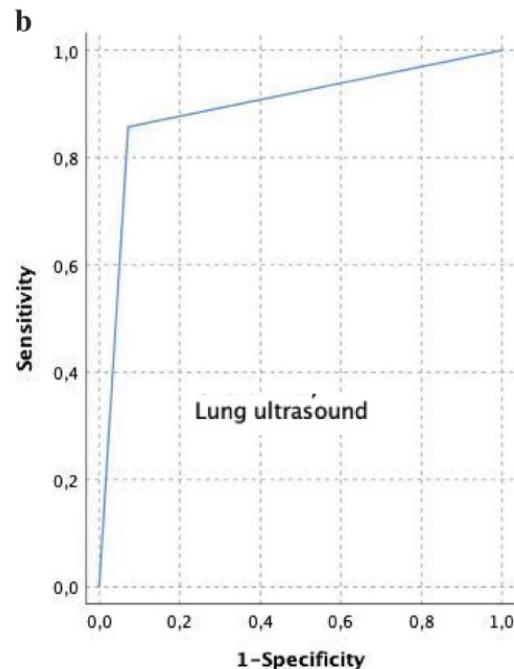
# Echographie



N = 410  
Médecine interne  
Age = 82 ans

Pneumonie / bronchite

VPN 90% VPP 97%

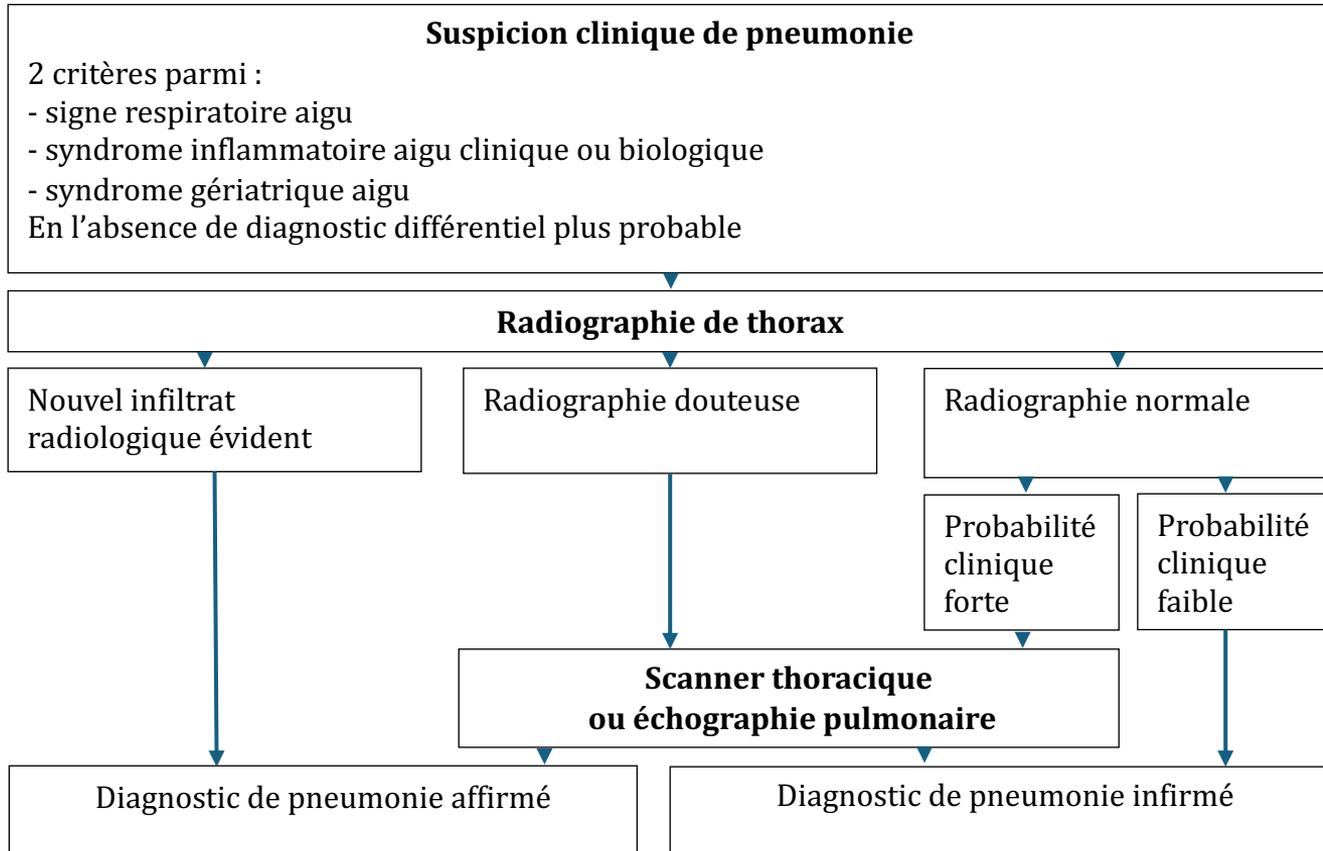


Pneumonie bactérienne / virale

VPN 43% VPP 99%

Mearelli et al, Sci Rep. 2021

# Place de l'imagerie pour les IRB



# L'avenir...

## BMJ Open LOw-dose CT Or Lung UltraSonography versus standard of care based-strategies for the diagnosis of pneumonia in the elderly: protocol for a multicentre randomised controlled trial (OCTOPLUS)

Virginie Prendki ,<sup>1,2</sup> Nicolas Garin,<sup>3,4</sup> Jerome Stirnemann,<sup>4</sup> Christophe Combescure,<sup>5</sup> Alexandra Platon,<sup>6</sup> Enos Bernasconi,<sup>7</sup> Thomas Sauter,<sup>8</sup> Wolf Hautz,<sup>8</sup> The OCTOPLUS study group

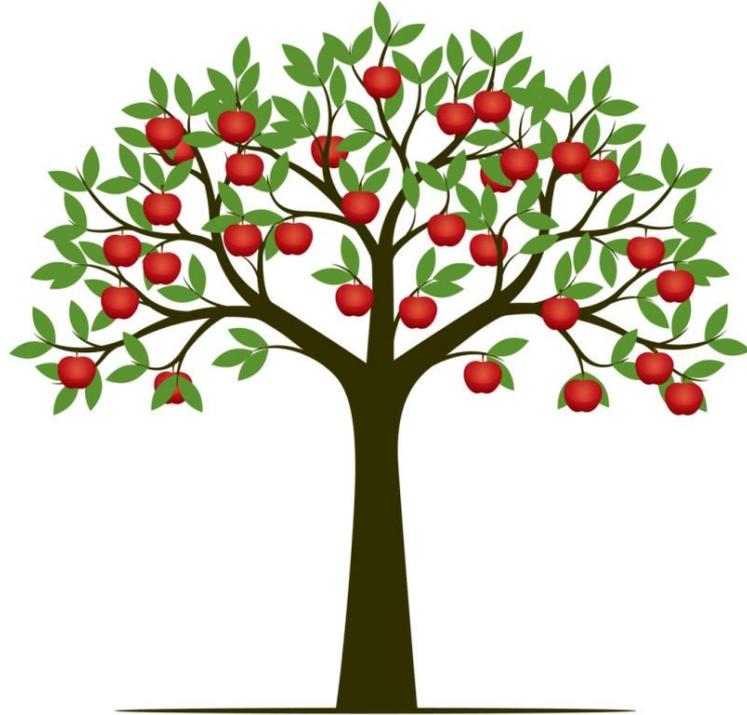
STUDY PROTOCOL

Open Access

The effect of focused lung ultrasonography on antibiotic prescribing in patients with acute lower respiratory tract infections in Danish general practice: study protocol for a pragmatic randomized controlled trial (PLUS-FLUS)



Julie Jepsen Strøm<sup>1\*</sup> , Camilla Aakjær Andersen<sup>1</sup>, Martin Bach Jensen<sup>1</sup>, Janus Laust Thomsen<sup>1</sup>, Christian B. Laursen<sup>2,3</sup>, Søren Helbo Skaarup<sup>4</sup>, Hans Henrik Lawaetz Schultz<sup>5</sup> and Malene Plejdrup Hansen<sup>1</sup>



**JNI** 25<sup>es</sup> Journées  
Nationales  
d'Infectiologie

**DEAUVILLE**  
et la région Normandie

du mercredi 12 au vendredi 14 juin 2024



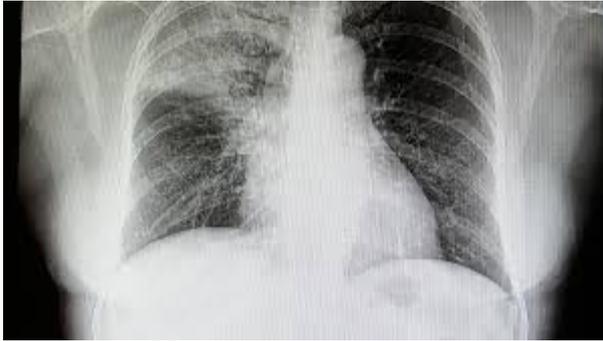
Merci de  
votre attention



**HOPITAUX**  
DU PAYS DU  
MONT BLANC

Chamonix - Sallanches

# Cibler les patients...



Dans un contexte de ressources limitées

Pour éviter la surenchère paraclinique

Compte-tenu de leurs impacts respectifs

**Viser le diagnostic nosologique plus que microbiologique**