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Antimicrobial stewardship in long-term care facilities in Belgium: a questionnaire-based survey of nursing homes to evaluate initiatives and future developments

François Kidd^{1*}, Dominique Dubourg², Francis Heller³ and Frédéric Fripiat⁴

AMS in LTCFS

Introduction

Introduction: Presentation

- Jolimont Group:
 - Belgian Federal pilot project 2010-2014
« Infection control in LTCFS »
- ID physician & Infection control MD:
 - Dissertation for ID and clinical microbiology interuniversity certificate 2014
 - Open-access publication ARIC 2016 with other experts

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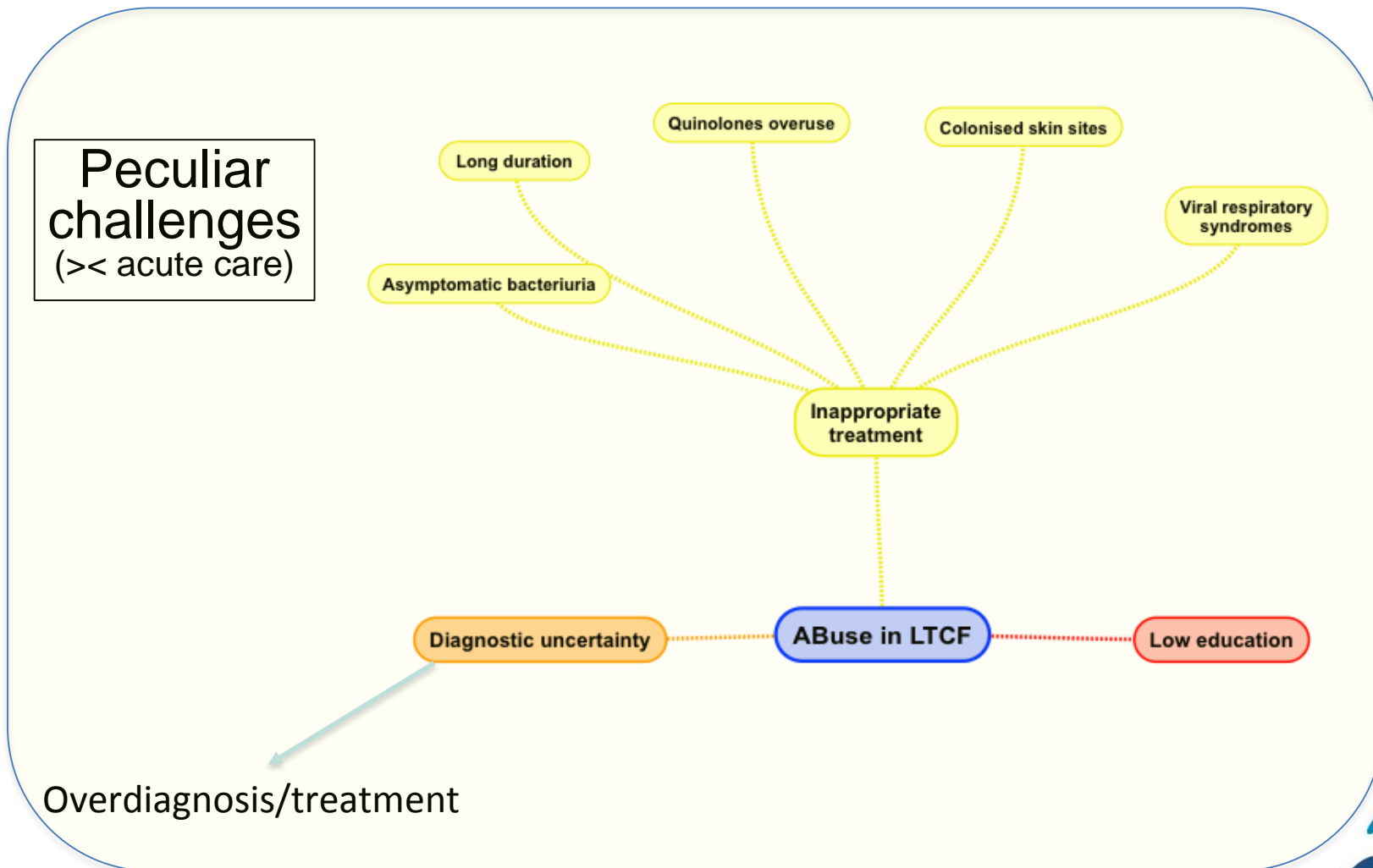
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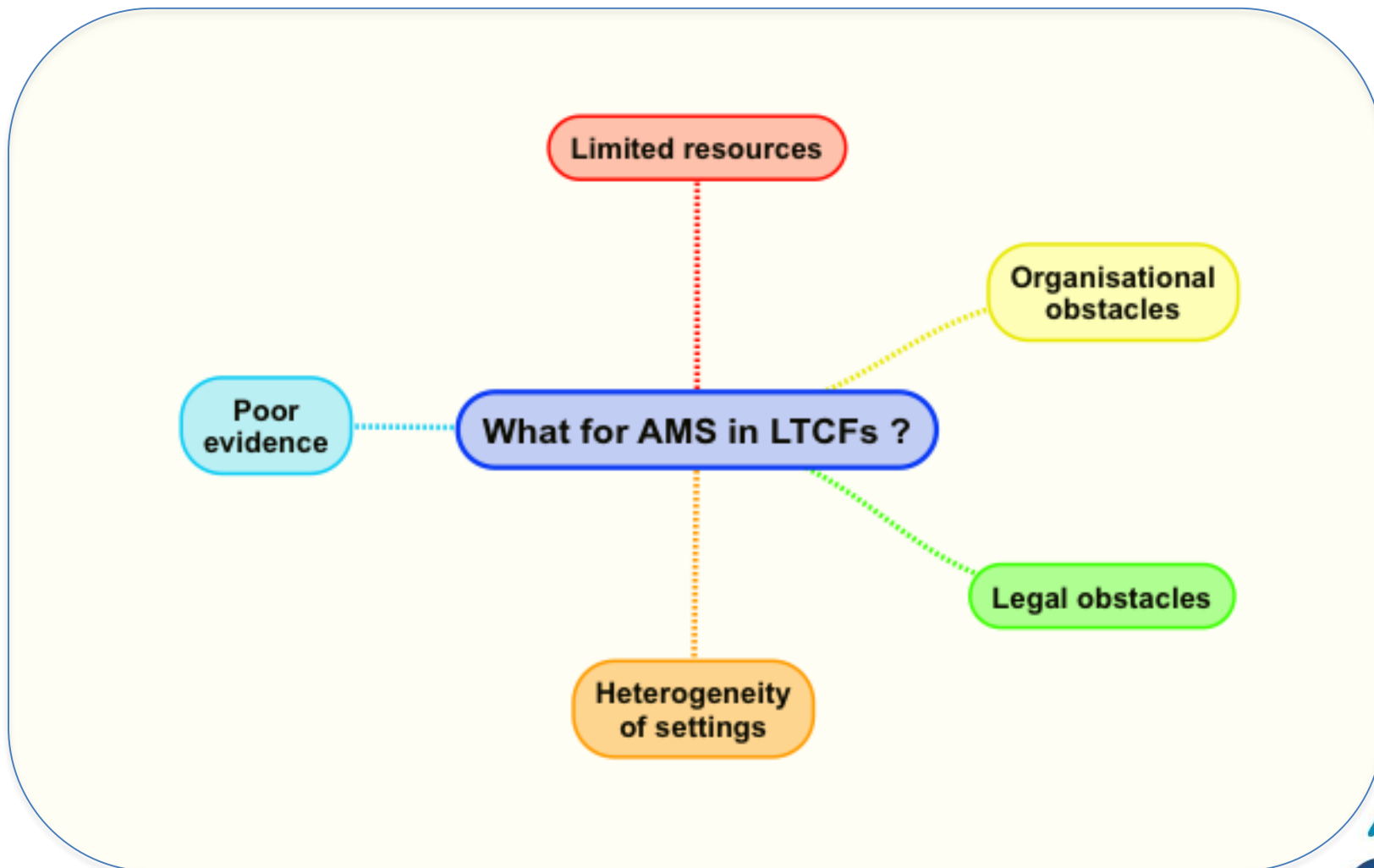
François Kidd^{1*}, Dominique Dubourg², Francis Heller³ and Frédéric Fripiat⁴

Introduction: Antimicrobial use



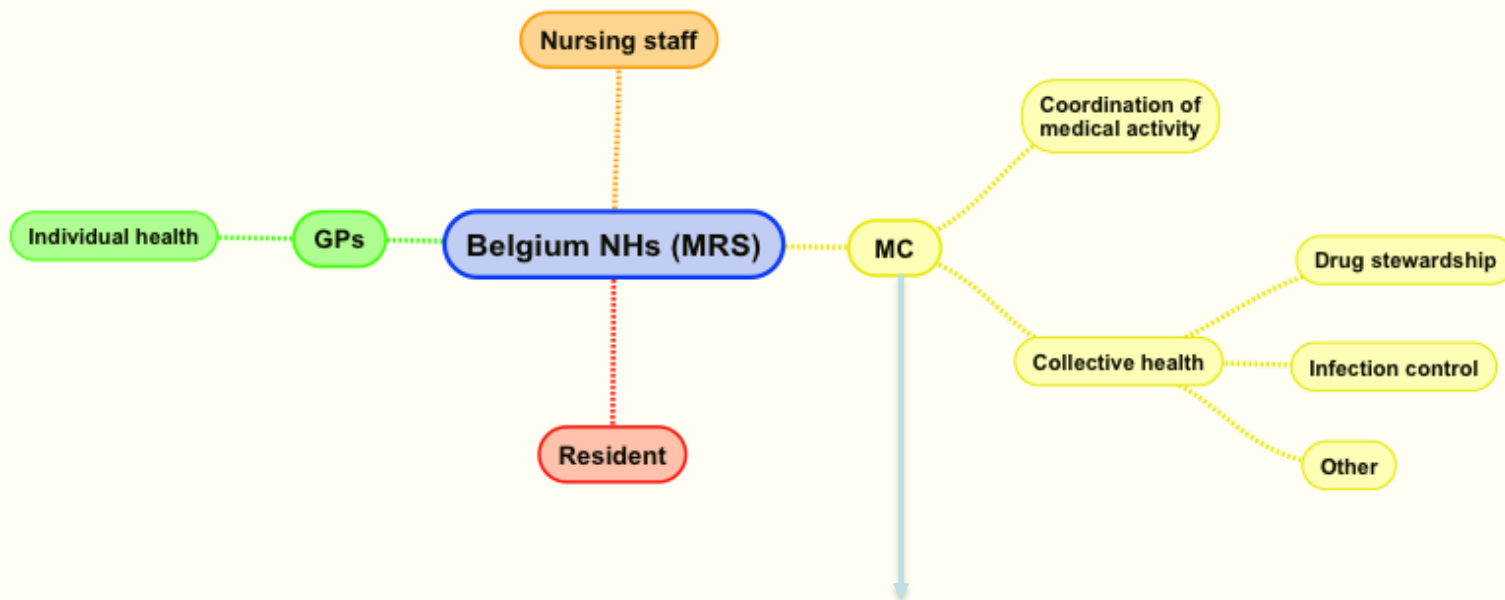
Pettersson et al. J. Antimicrob. Chemother. **2011**; 66:2659–66; Stone et al. Infect. Control Hosp. Epidemiol. **2012**; 33:965–77; Moro et al. Future Microbiol. **2013**; 8:1011–25; High et al. Clin. Infect. Dis. **2009**; 48:149–71; Loeb et al. Infect. Control Hosp. Epidemiol. **2001**; 22:120–4; Daneman et al. JAMA Intern. Med. **2013**; 173:673–82; Bonomo et al. Clin. Infect. Dis. **2000**; 31:1414–22.

Introduction: Antimicrobial stewardship (AMS)



Nicolle et al. Antimicrob. Resist. Infect. Control **2014**; 3:6; Lim et al. BMC Infect. Dis. **2014**; 14.

Introduction: healthcare in Belgium's LTCFs



Medical coordinator: Potential key position
for AMS implementation

Introduction

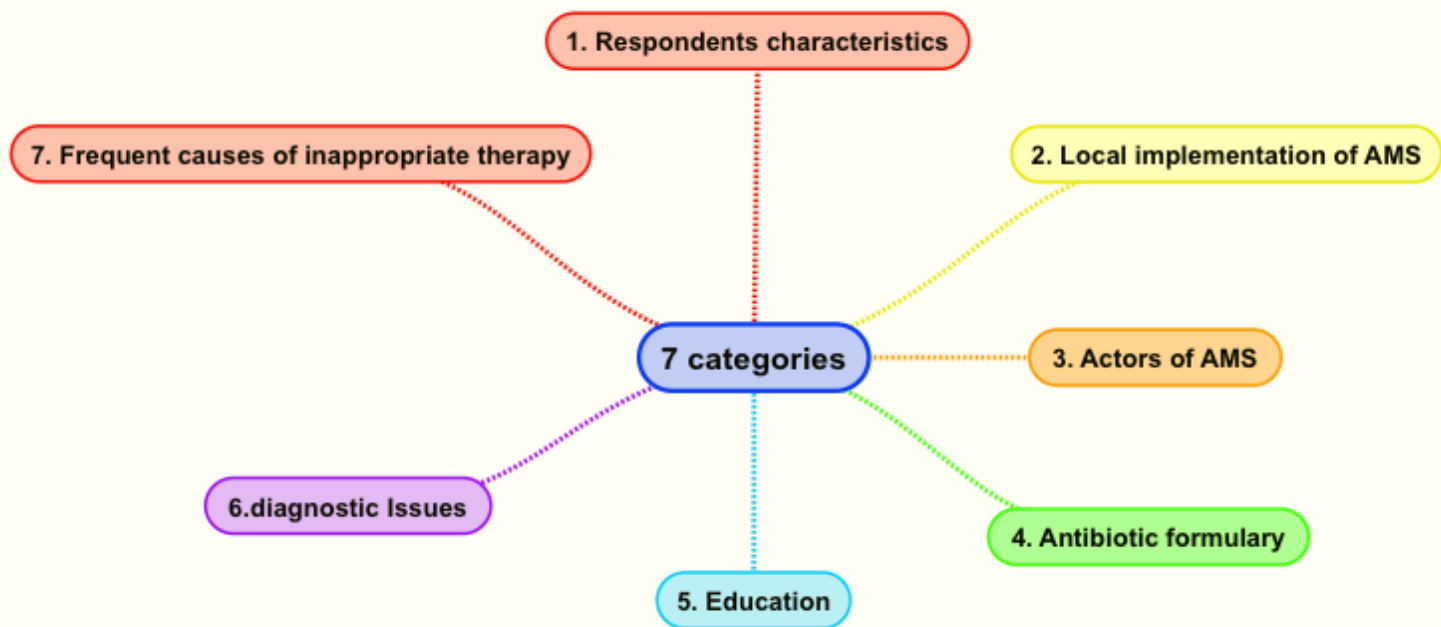
In this study we aimed to qualitatively evaluate past and present initiatives and possible future developments of AMS in LTCFs with a questionnaire survey submitted to MCs.

AMS in LTCFS

Methods

Methods: questionnaire characteristics

33 questions



Methods: questionnaire characteristics

3 types of questions:

– Multiple choice

3. Depuis combien de temps exercez vous la fonction de médecin coordinateur? *

3. Sinds hoe lang werkt u in de functie van CRA?

de 3 à 10 ans / van 3 tot 10 jaren

6. Dans votre institution, avez vous le sentiment qu'il est possible de développer ou améliorer la politique de gestion de l'antibiothérapie? veuillez donner une évaluation de 0 à 5

6. Bent u de mening toegedaan dat het ontwikkelen of verbeteren van een antibioticabeleid mogelijk is in uw instelling,? Geef een score van 0 tot 5

0 1 2 3 4 5

Pas du tout possible / Absoluut niet mogelijk tout à fait possible / Helemaal mogelijk

7. Commentaires. Si vous le désirez, faites nous part de vos commentaires concernant ce problème.

7. Heeft u opmerkingen. Indien gewenst, beschrijf uw opmerkingen hierover

Google
docs®
form

AMS in LTCFS

Results

39/327 respondents (12%)

Results: 1. Respondents characteristics

Institution characteristics	
Province of institution (n=39)	
Brussels	3 (8%)
East Flanders	6 (15%)
Walloon Brabant	4 (10%)
Hainaut	13 (33%)
Namur	6 (15%)
Liège	6 (15%)
Luxembourg	1 (3%)
Number of beds (n=39)	
<50	5 (13%)
50 to 150	28 (72%)
> 150	6 (15%)
Respondent characteristics	
Duration of stay in institution (n=29)	
< 3 years	1 (5%)
3-10 years	6 (27%)
>10 years	15 (68%)

Table 1. Respondents' geographical and professional characteristics (n= number of respondents to the question)



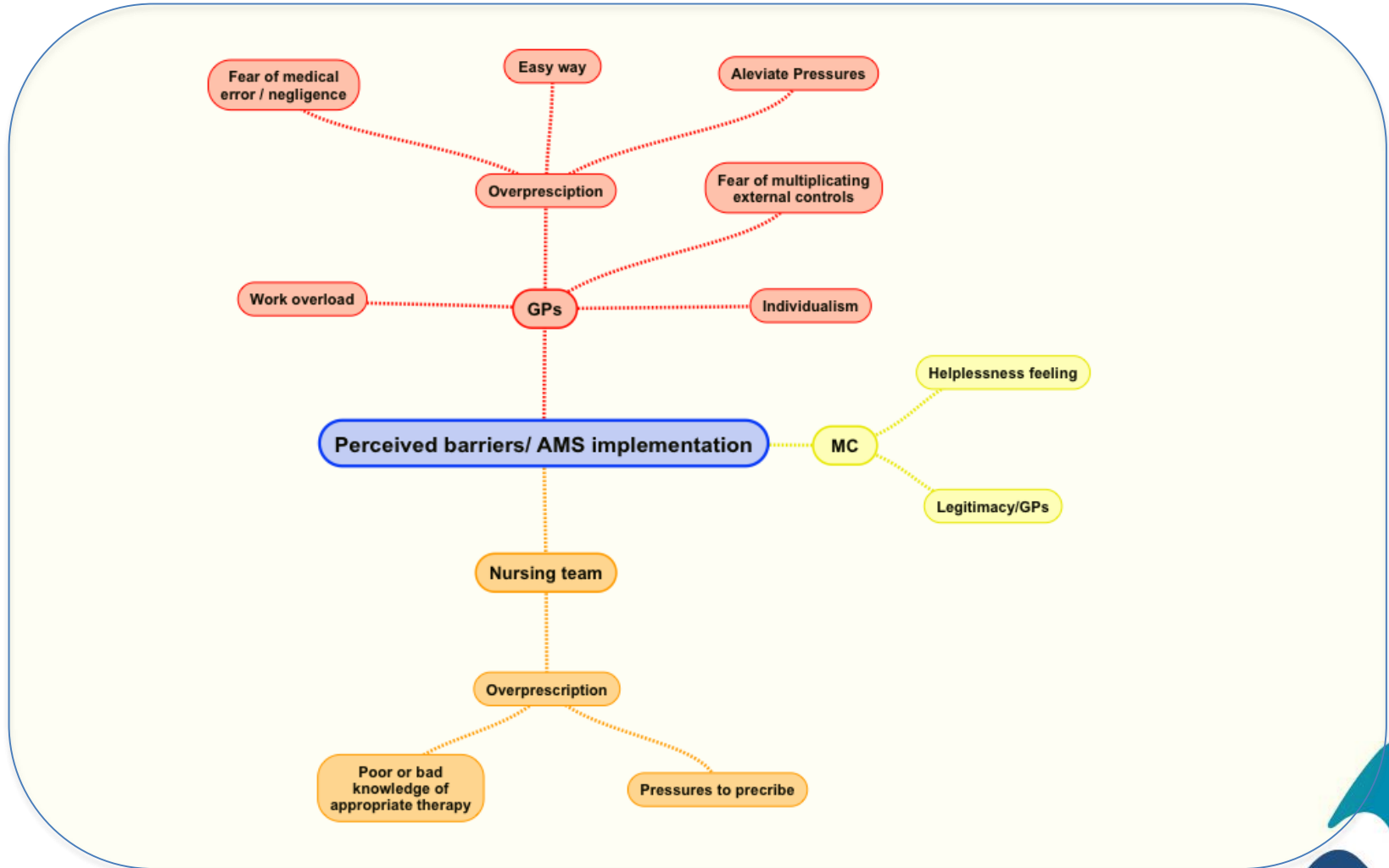
Results: 2. Local implementation of AMS

AMS implementation		
Past or present development (n=22)		
Yes	5 (23%)	
No	17 (77%)	
Future possibility. Score 0 to 5 (n=39)		
Mean score 2.7/5	0	3 (2%)
	1	2 (5%)
	2	9 (23%)
	3	16 (41%)
	4	7 (18%)
	5	2 (5%)
<i>Table 2</i> Implementation of adequate local structures for AMS (Evaluation scale question: score from 0 – “I do not agree at all” - to 5 – “I totally agree” -)		

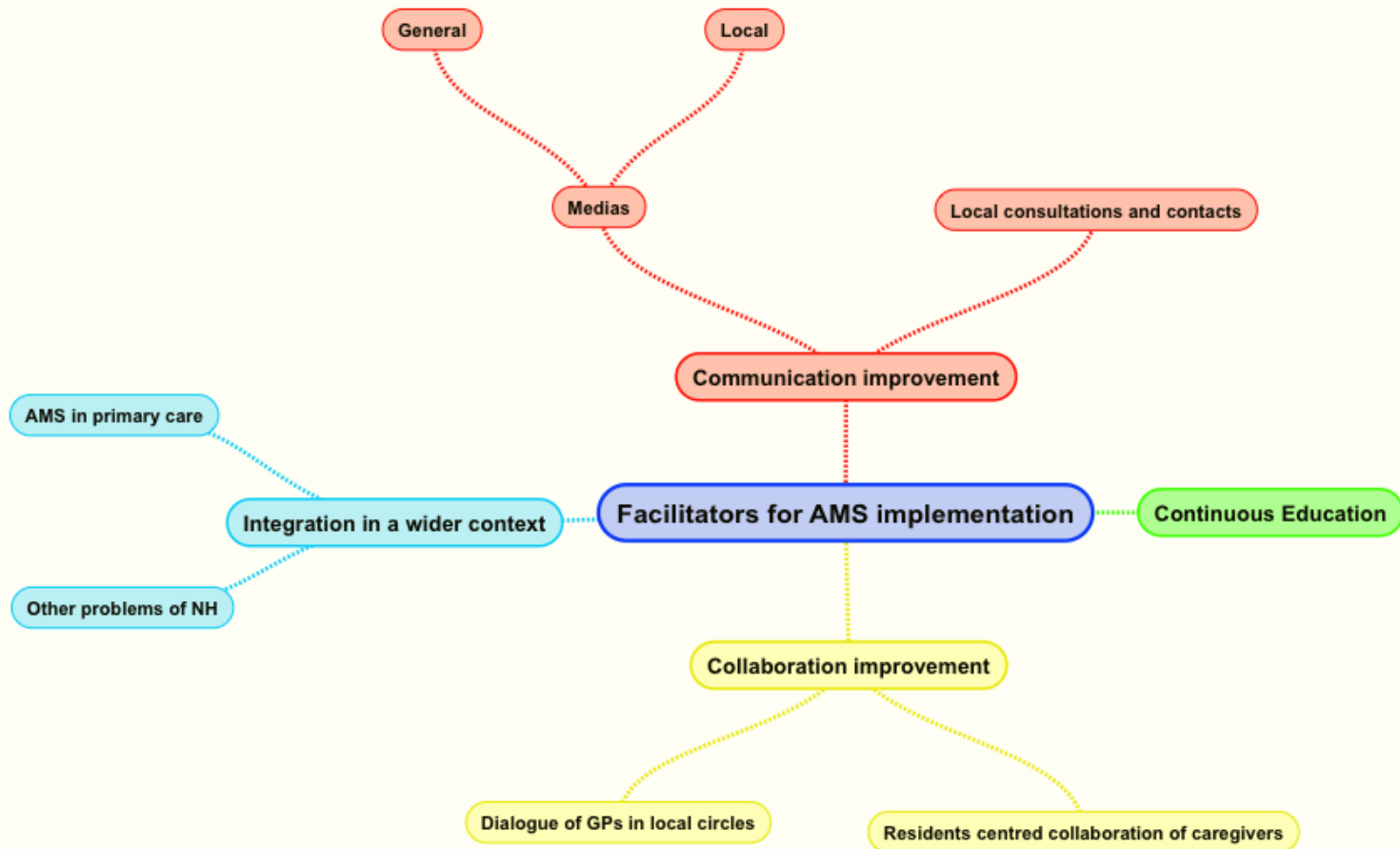


← 35%

Results: 2. Local implementation of AMS



Results: 2. Local implementation of AMS



Results: 3. Actors of AMS in NH

Importance of AMS Actors		
Medical coordinators (n=39)		
Mean score 3.1/5	0	3 (8%)
	1	4 (10%)
	2	7 (18%)
	3	6 (15%)
	4	10 (26%)
	5	9 (23%)
Circle of GPs (n=39)		
Mean score 2.9/5	0	6 (15%)
	1	5 (13%)
	2	5 (13%)
	3	4 (10%)
	4	10 (26%)
	5	9 (23%)
Nursing team (n=39)		
Mean score 3.5/5	0	2 (5%)
	1	4 (10%)
	2	2 (5%)
	3	9 (23%)
	4	9 (23%)
	5	13 (33%)
Hospital specialist (ID or AMS). (n=39)		
Mean score 3.1/5	0	2 (5%)
	1	6 (15%)
	2	6 (15%)
	3	7 (18%)
	4	8 (21%)
	5	10 (26%)

Table 3. Actors to implicate in the local AMS program (ID refers to infectious disease specialist)

← 36%

← 35%

Results: 4. Antibiotic formulary implementation

Antimicrobial formulary			
Actual status in institution (n=21)			
Inexistent	6 (29%)	← 67%	
Unused off.Rec.	8 (38%)		
Promoted off.Rec. but unused	3 (14%)		
Promoted and used off.Rec.	2 (10%)	← 20%	
Used loc.Rec. based on off. Rec.	2 (10%)		
Local formulary is a good project (n=38)			
Mean score 2.9/5	0	4 (8%)	← 44%
	1	8 (21%)	
	2	5 (13%)	
	3	8 (21%)	
	4	5 (13%)	
	5	8 (21%)	
<i>Table 4.</i> Local antimicrobial formulary implementation (off.Rec.:official recommendations ;loc.Rec. :local recommendations)			

Results: 5. Education

Importance of education		
Antibiotic use in LTCF in studies (n=39)		
Mean score 4.5/5	0	0 (0%)
	1	1 (3%)
	2	0 (0%)
	3	3 (8%)
	4	8 (21%)
	5	27 (69%)
AMS training of MCs (n=39)		
Mean score 4.2/5	0	0 (0%)
	1	1 (3%)
	2	1 (3%)
	3	6 (15%)
	4	13 (33%)
	5	18 (46%)
Basic training for LTCF nurses (n=39)		
Mean score 3.7/5	0	0
	1	2 (5%)
	2	6 (15%)
	3	9 (23%)
	4	7 (18%)
	5	15 (38%)
Online continuous education (n=39)		
Mean score 2.9/5	0	5 (13%)
	1	4 (10%)
	2	5 (13%)
	3	9 (23%)
	4	7 (18%)
	5	9 (23%)
<i>Table 5. The role of education</i>		

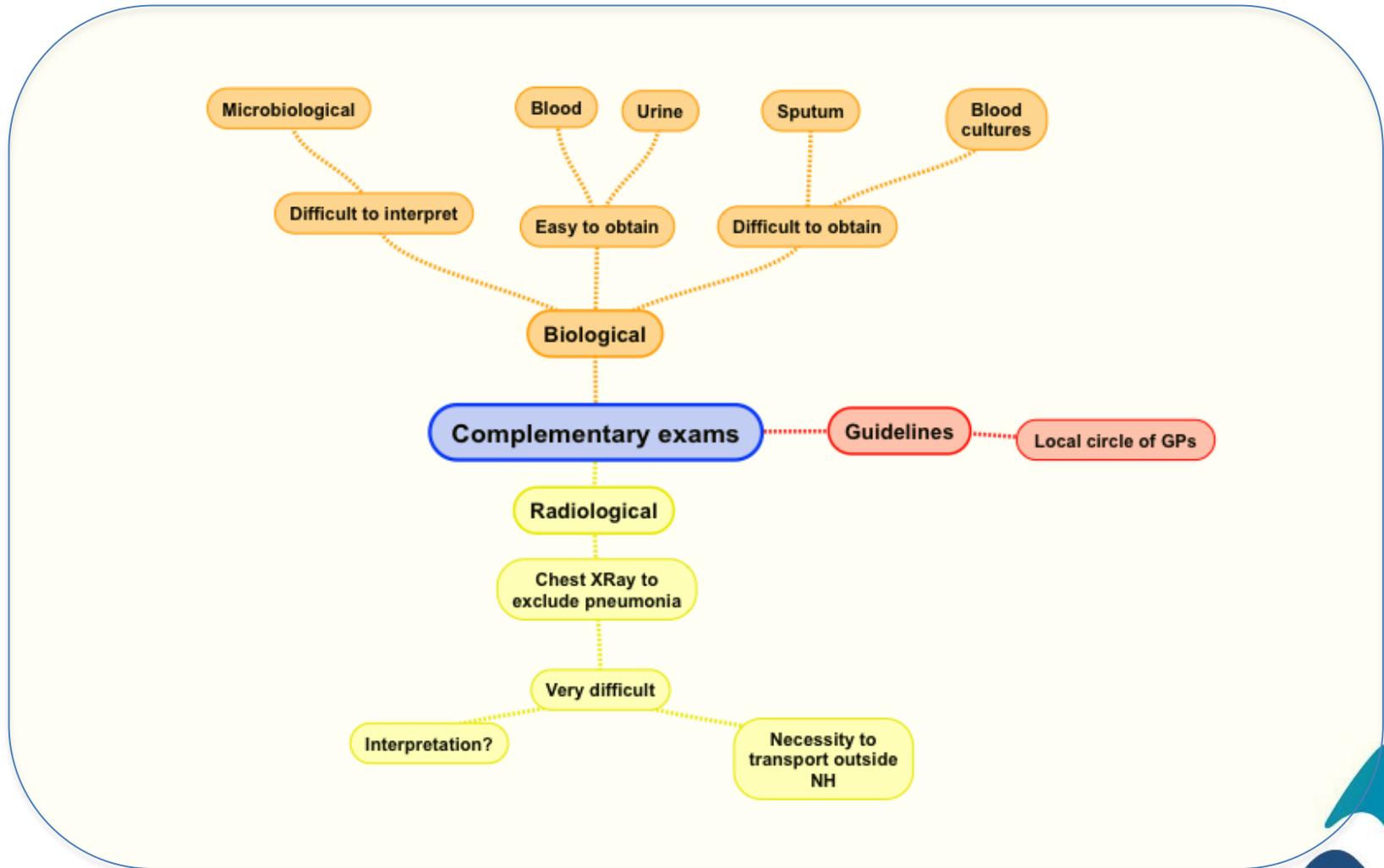


Results: 6. Diagnostic issues


Minimal clinical criteria for ABtherapy	
Knowledge and practical use (n=21)	
Known and use	9 (43%)
Known but unused	11 (52%)
Unknown	1 (5%)
Useful tool for GPs. Score 0 to 5 (n=39)	
Mean score: 3.8/5	
Useful tool for Nurses (n=38)	
Mean score: 3.6/5	
Use of complementary investigations	
Recommended in institution (n=22)	
Yes	13 (59%)
No	8 (36%)
Not known	1 (5%)
Local guidelines implementation (n=39)	
Mean score: 2.9/5	
<i>Table 6.</i> Means to overcome the diagnostic issues leading to inappropriate antibiotherapy (ABtherapy: antibiotherapy).	



Results: 6. Diagnostic issues



Results: Frequent causes of inappropriate antimicrobial therapy



Priority vs inappropriate ABtherapy
1. Asymptomatic UTI treatment (n=39) Mean rate: 4.0/5
2. AB use in respiratory viroses (n=39) Mean rate: 3.9/5
3. AB use in chronic wounds (n=39) Mean rate: 3.8/5
4. Excessive FQ use (n=39) Mean rate: 3.7/5
5. Long antibiotic durations (n=39) Mean rate: 3.6/5

Table 7. Frequent causes of inappropriate antibiotherapy which are priorities for future action (UTI: urinary tract infection; AB: antibiotic).

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Discussion

Discussion: originality & limitations

- Originality
 - Few studies
- Limitations
 - Low response rate. Validity of the results?
 - Small sample of self selected interested MCs.
 - Need for interventions studies in our settings

Discussion: AMS implementation

- Past and present:
 - Experienced MCs
 - >2/3 never seen any AMS measure
- Future:
 - Possible but with a lot of uncertainties (2.7/5)
- Barriers & Facilitators:
 - Accurately identified (the same and more than other studies and guidelines)

Discussion: Actors of AMS

- MCs:
 - 1/3 rejected the proposed key position
 - resistance to change?
- Nursing team:
 - Important role to give (central position in NH)
 - Recognised by other studies and guidelines!
(potential facilitators)

Discussion: Actors of AMS

- Hospital specialists :
 - 65% \geq 3/5
 - US Intervention study ... ID consultation
 - antimicrobial use -30%
 - Decrease incidence CDAD

Jump et al, Infect. Control Hosp. Epidemiol. 2012;33:1185-92

- Extrapolation? US settings $><$ Belgium
- But the impact can not be overlooked!
- Future intervention studies in Europe?

Discussion: Antibiotic formulary & Education

- Formulary unused or inexistent in a majority of settings. Lack of enthusiasm about future development.
- On education respondents are more consensual and enthusiastic. Top rated proposition: specific training about antimicrobial use during medical studies.

Discussion: Diagnostic issues & inappropriate use

- MCs have accurate knowledge about:
 - The problematic of reducing diagnostic uncertainties
 - Guidelines and treatment criteria use
 - important role of the nurses = 2008 IDSA guidelines (*High et al, Clin Infect Dis 2009;48:149-71*)
 - The main causes of inappropriate antimicrobial use
 - Asymptomatic bacteriuria also viewed as a top priority by other authors (*Nicolle et al, Clin Microbiol Rev 1996 9:1-17; Moro et al, Future Microbiol 2013; 8:1011-25; Bonomo et al, Clin Infect Dis 2000;31:1414-22*)

Discussion: Diagnostic issues & inappropriate use

- Complementary exams:
 - Simple biological tests and chest X ray recommended in a majority of institutions
 - Impossible blood cultures (?)
 - Chest X ray recognised as important but rarely realised in practice.
 - 20-35% in community based facilities in US (*High et al, Clin Infect Dis 2009;48:149-71*)
 - Transport to hospital. Cultural obstacles?
 - Important problem to address:
 - » ! mortality of pneumonia in LTCF !

Conclusion

- AMS initiatives reported in a minority of settings.
- MCs
 - are sometimes not optimistic about future.
 - accurately identified problems and solutions
 - seem to have the competences to play a key role in the future

Conclusion

Several issues identified should be subsequently evaluated in European and Belgian settings by prospective intervention studies:

- MC; GPs, nursing, hospital specialists role
- Complementary exams use (chest X ray)

Remerciements

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