



Sciences Economiques & Sociales de la Santé  
& Traitement de l'Information Médicale

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**Littératie en santé:  
Validation de la version française de l'échelle FCCHL**

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# Littératie en santé: validation de la version française de l'échelle FCCHL: Functional, Communicative and Critical Health Literacy

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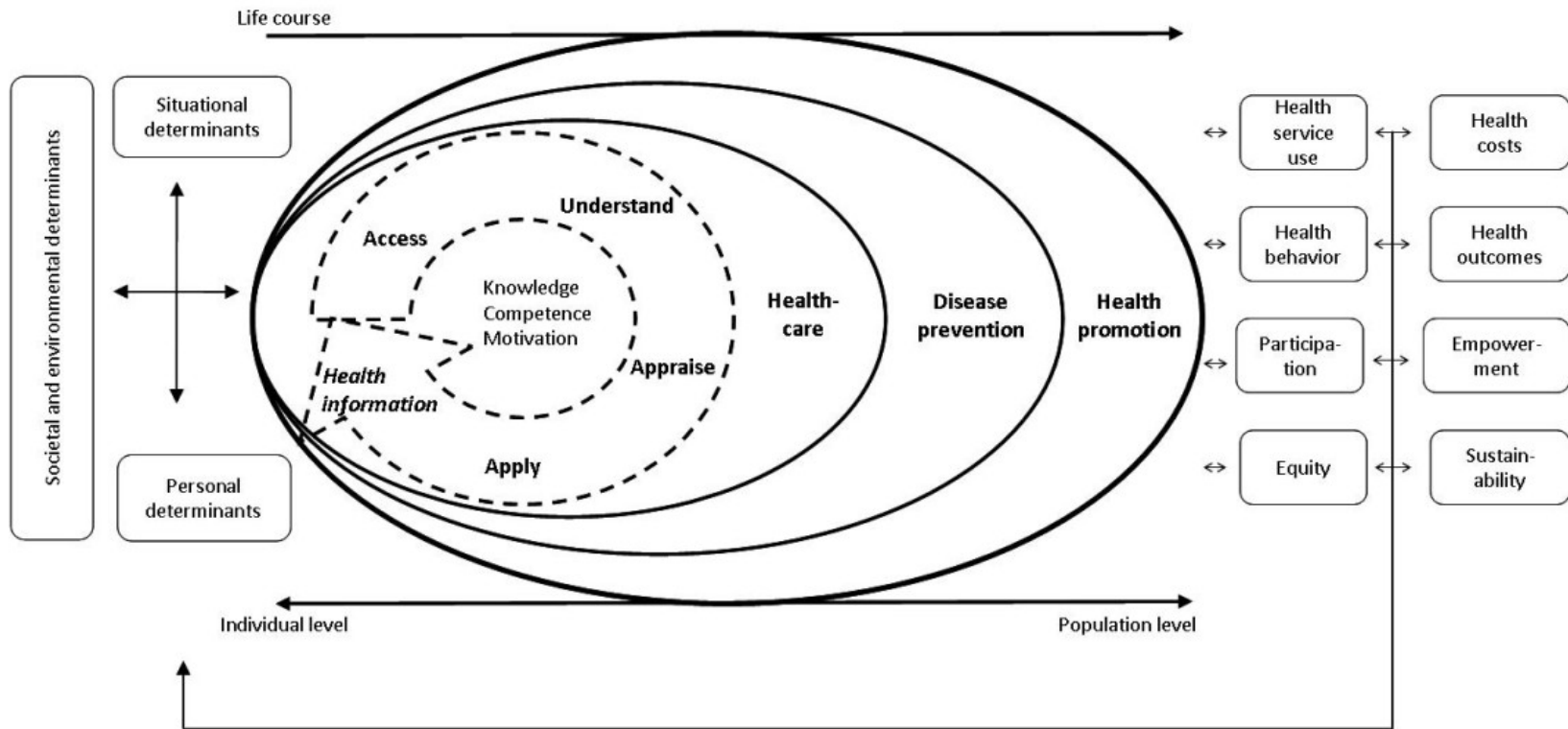
Webinar QuanTIM

# 1. La littératie en santé (LS)

## □ Un concept multidimensionnel [Nutbeam HPI 2000]

- ✓ **Fonctionnelle**: compréhension de base
- ✓ **Communicative**: compétences sociales utilisées pour extraire l'information
- ✓ **Critique**: compétences critiques avancées pour l'analyse et l'utilisation de l'information

# Modèle conceptuel



[Sorensen BMC PH 2012]

# Prolifération des mesures de la LS

- ❑ 51 instruments identifiés en 2013 [Haun JHC:IP 2013]
- ❑ Ces mesures sont:
  - ✓ Générales (3HLQ [Chew Fam Med 2004] ...)
  - ✓ Spécifiques (FCCHL [Ishikawa Diabetes care 2008] ...)
- ❑ La plupart des mesures nécessitent la présence d'un individu pour l'administration (ex: STOFHLA)

❑ **Choix d'un instrument multidimensionnel**

❑ **Moins long pour des populations âgées**

➔ **FCCHL**

✓ **Multidimensionnel**

✓ **Très court**

✓ **Facile à remplir**

# Objectifs

- ❑ **Principal:** évaluation psychométrique de la FCCHL\*
- ❑ **Secondaire:** validité des versions françaises:
  - ✓ Three health literacy questions (3HLQ)\*\*
  - ✓ 3-items subjective numeracy scale (SNS-3)\*\*\*

\* [Ishikawa Diabetes care 2008]

\*\*[Chew Fam Med 2004]

\*\*\*[McNaughton Med. Dec. Making

# Méthodes

- Double traduction des échelles
- Une enquête transversale en ligne
- Mesures sociodémographiques historique médicale
  - ✓ Sexe, âge, éducation
  - ✓ Indice de précarité (EPICES)
  - ✓ Histoire du cancer
  - ✓ Difficultés à poser des questions au médecin

**En général, trouvez-vous difficile de poser des questions à votre médecin ?**

1. Jamais    2. Rarement    3. Parfois    4. Souvent    5. Toujours



FCCHL 14-items à 5 points Likert

3HLQ

✓ **Avez-vous besoin d'aide pour lire les documents de l'hôpital ?**

1. Jamais 2. Rarement 3. Parfois 4. Souvent 5. Toujours

✓ **Avez-vous fréquemment des problèmes pour en savoir plus sur votre santé à cause de difficultés à lire les documents de l'hôpital ?**

1. Jamais 2. Rarement 3. Parfois 4. La plupart du temps 5. Tout le temps

✓ **Etes-vous confiant(e) pour remplir des formulaires vous-mêmes ?**

1. Jamais 2. Rarement 3. Parfois 4. La plupart du temps 5. Tout le temps

## SNS-3

✓ Etes-vous à l'aise avec les fractions ?

<sub>1</sub>

<sub>2</sub>

<sub>3</sub>

<sub>4</sub>

<sub>5</sub>

<sub>6</sub>

Pas du tout  
à l'aise

Tout à fait  
à l'aise

✓ Etes-vous à l'aise pour calculer le prix d'un vêtement après une remise de 25% ?

<sub>1</sub>

<sub>2</sub>

<sub>3</sub>

<sub>4</sub>

<sub>5</sub>

<sub>6</sub>

Pas du tout  
à l'aise

Tout à fait  
à l'aise

✓ À quelle fréquence trouvez-vous les informations chiffrées utiles

<sub>1</sub>

<sub>2</sub>

<sub>3</sub>

<sub>4</sub>

<sub>5</sub>

<sub>6</sub>

Jamais

Très souvent

# Stratégie d'analyse

- Analyse factoriel exploratoire
- Analyse confirmatoire
- Analyse d'invariance
- Validité convergente

# Résultats et Discussions

**Table 1: Main participants' characteristics (n=2342)**

Sociodemographic and medical history		n	%	
Age	18-40	777	33.2	
	41-60	1111	47.4	
	61-83	454	19.4	
Female Gender		2258	96.4	
French maternal language		2269	97.8	
Education level	Primary/secondary	279	11.9	
	≤Three-year higher education	958	40.9	
	>Three-year higher education	1105	47.2	
Deprivation (EPICES Index)		409	18.1	
Cancer history		1073	45.8	
Difficulties in asking physicians questions	Always (1)	37	1.6	
	Often (2)	229	9.8	
	Sometimes (3)	735	31.4	
	Rarely (4)	669	28.6	
	Never (5)	632	27	
	Missing values	40	1.7	
Health literacy and numeracy		Possible range	Mean	SD
FCCHL		14 - 70	55.58	7.06
3HLQ		3 - 15	12.79	1.86
Numeracy (SNS-3)		3 - 18	14.26	3.45

FCCHL=Functional, Communicative and Critical Health Literacy

3HLQ= Three Health Literacy Question

SNS-3= 3-items Subjective Numeracy Scale

EPICES Index= index to measure individual deprivation

**Table 2: Correlations between the various FCCHL items (n=2342)**

	FCCHL1	FCCHL2	FCCHL3	FCCHL4	FCCHL5	FCCHL6	FCCHL7	FCCHL8	FCCHL9	FCCHL1 0	FCCHL1 1	FCCHL1 2	FCCHL1 3	FCCHL1 4
FCCHL1 Find characters that I cannot read	1													
FCCHL2 Feel that the print is too small for me to read	<b>0.44</b>	1												
FCCHL3 Feel that the content is too difficult for me to understand	<b>0.74</b>	<b>0.56</b>	1											
FCCHL4 Feel that it takes a long time to read them	<b>0.52</b>	<b>0.50</b>	<b>0.65</b>	1										
FCCHL5 Need someone to help me read them	<b>0.45</b>	<b>0.43</b>	<b>0.62</b>	<b>0.56</b>	1									
FCCHL6 Collect information from various sources	0.05	0.08	0.16	0.11	0.18	1								
FCCHL7 Extract the information I want	0.07	0.01	0.13	0.10	0.12	<b>0.70</b>	1							
FCCHL8 Understand the obtained information	0.28	0.11	0.36	0.28	0.25	<b>0.44</b>	<b>0.44</b>	1						
FCCHL9 Communicate my opinion about my illness	0.12	0.06	0.15	0.12	0.12	<b>0.43</b>	<b>0.41</b>	<b>0.48</b>	1					
FCCHL1 0 Apply the obtained information to my daily life	0.11	0.10	0.15	0.13	0.10	<b>0.45</b>	0.39	<b>0.44</b>	<b>0.54</b>	1				
FCCHL1 1 Consider whether the information is applicable to me	0.00	0.09	0.10	0.05	0.08	<b>0.47</b>	<b>0.42</b>	0.30	0.33	<b>0.39</b>	1			
FCCHL1 2 Consider whether the information is credible	0.00	0.05	0.04	- 0.01	0.02	0.40	0.35	0.22	0.23	0.30	<b>0.76</b>	1		
FCCHL1 3 Check whether the information is valid and reliable	0.02	0.03	0.08	0.04	0.03	<b>0.41</b>	0.32	0.26	0.29	0.32	<b>0.56</b>	<b>0.66</b>	1	
FCCHL1 4 Collect information to make my healthcare decisions	0.08	0.02	0.10	0.07	0.06	0.40	0.35	0.32	<b>0.43</b>	0.36	<b>0.44</b>	<b>0.42</b>	<b>0.42</b>	1

Bold characters denotes  $r > 0.4$

# Analyse exploratoire

**Table 3: Factor structure of the FCCHL scale. (n=781, Training sample)**

	Factor			Communality
	1	2	3	
<b>Functional health literacy , Mean(SD)</b>				
FCCHL1 Find characters that I cannot read	<b>0.75</b>	-0.01	0.08	0.66
FCCHL2 Feel that the print is too small for me to read	<b>0.59</b>	-0.09	-0.08	0.43
FCCHL3 Feel that the content is too difficult for me to understand	<b>0.93</b>	0.03	0.02	0.88
FCCHL4 Feel that it takes a long time to read them	<b>0.70</b>	0.02	-0.01	0.50
FCCHL5 Need someone to help me read them	<b>0.66</b>	0.03	-0.05	0.46
<b>Communicative health literacy</b>				
FCCHL6 Collect information from various sources	0.02	<b>0.78</b>	-0.04	0.66
FCCHL7 Extract the information I want	-0.03	<b>0.71</b>	-0.03	0.52
FCCHL8 Understand the obtained information	0.24	<b>0.62</b>	0.06	0.48
FCCHL9 Communicate my opinion about my illness	-0.08	<b>0.73</b>	0.08	0.46
FCCHL10 Apply the obtained information to my daily life	0.02	<b>0.68</b>	0.04	0.45
<b>Critical health literacy</b>				
FCCHL11 Consider whether the information is applicable to me	-0.02	0.23	<b>-0.71</b>	0.73
FCCHL12 Consider whether the information is credible	-0.01	-0.07	<b>-0.97</b>	0.86
FCCHL13 Check whether the information is valid and reliable	0.01	0.09	<b>-0.68</b>	0.54
FCCHL14 Collect information to make my healthcare decisions	-0.04	<b>0.42</b>	-0.27	0.37

Loading values higher than 0.4 are shown

# Analyse confirmatoire (1/2)

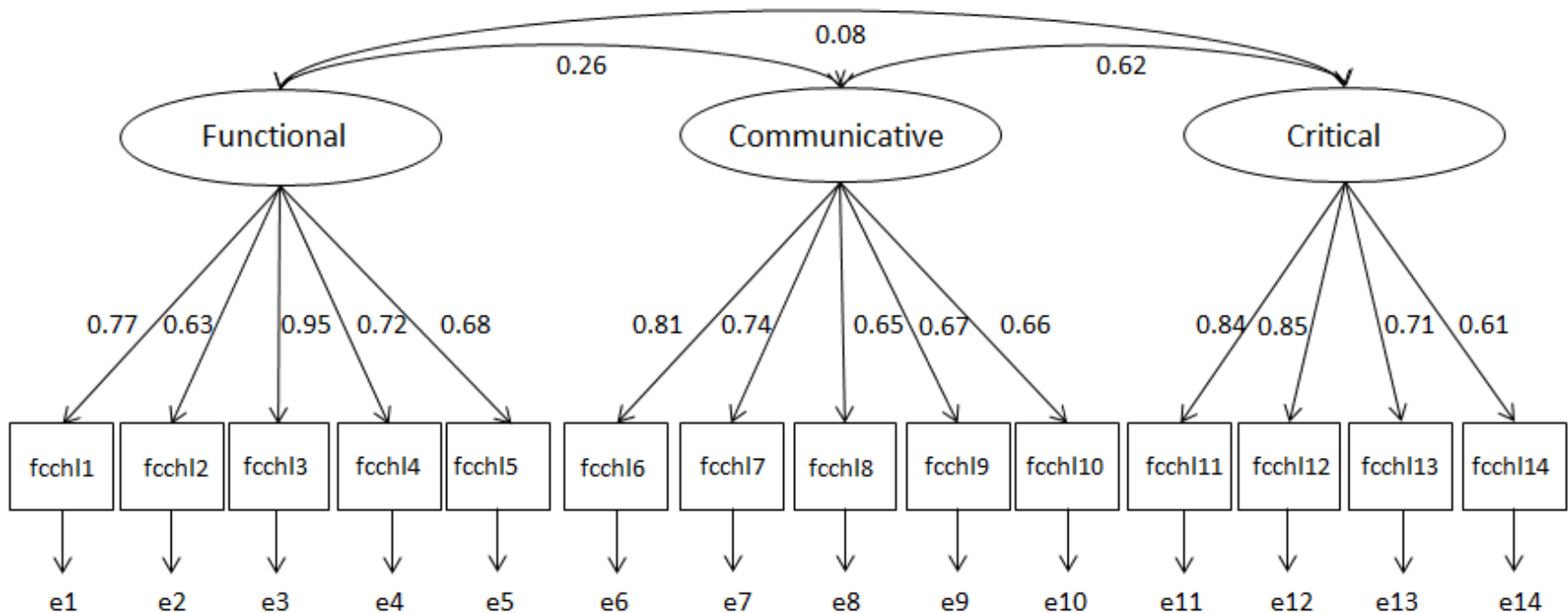


Figure 1: Standardized parameter estimates for the 3-factor model of FCCHL (n = 1561, validation sample). Rectangles represent the observed variables (items) and ellipses represent the latent constructs (factors). Values on the single-headed arrows leading from the factors to the items are standardized factor loadings. Values on the curved double-headed arrows are correlations between factors terms

# Analyse confirmatoire (2/2)

## ☐ Indices d'ajustement satisfaisants

- ✓ Root mean square error of approximation (RMSEA)  
RMSEA=0.086 CI90%=[0.081-0.091]
- ✓ Comparative fit index (CFI) CFI=0,946
- ✓ Tucker-Lewis index (TLI) TLI=0.933

## ☐ Cronbach's $\alpha$

- ✓ overall scale ( $\alpha=0.77$ )
- ✓ subscales ( $\alpha=0.79$ ,  $\alpha=0.74$  and  $\alpha=0.77$  for functional, communicative and critical dimensions respectively).
- ✓ For SNS-3 (mean=14.27, SD=3.45),  $\alpha=0.76$ .
- ✓ For the 3HLQ (mean=12.79, SD=1.86),  $\alpha=0.68$ .



# Analyse d'invariance

## Appendix D: Measurement invariance across age groups

Measurement Invariance model	AGE				
	Chi-square (DF)	CFI	RMSEA (90% CI)	$\Delta$ CFI	$\Delta$ RMSEA
<b>M1: Configural*</b>	1095 (222)	.948	.087 (.082-.092)		
<b>M2: Metric**</b>	1133 (244)	.947	.084 (.079-.089)	-.001 ( $\Delta$ M1-M2)	-.003 ( $\Delta$ M1-M2)
<b>M3: Scalar***</b>	1408 (322)	.935	.081 (.076-.085)	-.012 ( $\Delta$ M2-M3)	-.003 ( $\Delta$ M2-M3)
<b>M3bis: Partial scalar****</b>	1350 (321)	.938	.078 (.074-.083)	-.009 ( $\Delta$ M2-M3bis)	-.005 ( $\Delta$ M2-M3bis)

\* same factor structure across groups

\*\* loadings constrained to be equal across groups

\*\*\*loadings and thresholds constrained to be equal across groups

\*\*\*\* the fourth threshold of the reversed item FCCHL2 (Feel that the print is too small for me to read) was released in the youngest age group ( estimate in the youngest group was 0.049 whereas it was 0.691 in the two other age groups)

## Appendix E: Measurement invariance across education levels

Measurement Invariance model	EDUCATION				
	Chi-square (DF)	CFI	RMSEA (90% CI)	$\Delta$ CFI	$\Delta$ RMSEA
<b>M1: Configural*</b>	1146 (222)	.941	.089 (.084-.095)		
<b>M2: Metric**</b>	1165 (244)	.942	.085 (.080-.090)	.001 ( $\Delta$ M1-M2)	-.004 ( $\Delta$ M1-M2)
<b>M3: Scalar***</b>	1301 (322)	.938	.076 (.072-.081)	-.004 ( $\Delta$ M2-M3)	-.009 ( $\Delta$ M2-M3)

\* same factor structure across groups

\*\* loadings constrained to be equal across groups

\*\*\*loadings and thresholds constrained to be equal across groups

## Appendix F: Measurement invariance across deprivation

Measurement Invariance model	DEPRIVATION				
	Chi-square (DF)	CFI	RMSEA (90% CI)	$\Delta$ CFI	$\Delta$ RMSEA
<b>M1: Configural*</b>	992 (148)	.945	.087 (.082-.092)		
<b>M2: Metric**</b>	999 (159)	.945	.084 (.079-.089)	.000 ( $\Delta$ M1-M2)	-.003 ( $\Delta$ M1-M2)
<b>M3: Scalar***</b>	1029 (198)	.946	.075 (.070-.079)	.001 ( $\Delta$ M2-M3)	-.009 ( $\Delta$ M2-M3)

\* same factor structure across groups

\*\* loadings constrained to be equal across groups

\*\*\*loadings and thresholds constrained to be equal across groups

# Validité convergente

**Table 4: Correlations between score FCCHL (sub) scale, 3HLQ, SNS-3 and Difficulties in asking physicians questions (n=2342)**

	1	2	3	4	5	6	7
1. Functional HL	1						
2. Communicative HL	<b>0.15</b>	1					
3. Critical HL	0.03	<b>0.46</b>	1				
4. FCCHL	<b>0.67</b>	<b>0.72</b>	<b>0.65</b>	1			
5. 3HLQ	<b>0.46</b>	<b>0.16</b>	0.02	<b>0.33</b>	1		
6. SNS-3	<b>0.16</b>	<b>0.13</b>	0.06	<b>0.18</b>	<b>0.15</b>	1	
7. Difficulties in asking physicians questions	<b>0.20</b>	<b>-0.12</b>	0.05	<b>0.15</b>	<b>0.32</b>	<b>0.12</b>	1

HL=Health Literacy

FCCHL=Functional, Communicative and Critical Health Literacy

Bold characters denotes  $p < 0.01$

# Validité Prédicative

**Table 5: Bivariate relationships between SNS-3, 3HLQ and other parameters (n=2342)**

	Functional HL		Communicative HL		Critical HL		Total HL		SNS-3		3HLQ	
	Mean ± SD	P	Mean ± SD	P	Mean ± SD	P	Mean ± SD	P	Mean ± SD	P	Mean ± SD	P
<b>Age</b>												
18-40	19.57 ± 3.93	<0.001	20.63 ± 2.78	0,617	16.32 ± 2.75	<0.001	56.53 ± 6.32	<0.001	13.94 ± 3.61	<0.001	12.85 ± 1.91	0.160
41-60	18.70 ± 4.27		20.62 ± 3.12		15.86 ± 3.13		55.20 ± 7.34		14.23 ± 3.39		12.81 ± 1.83	
61-83	18.49 ± 4.27		20.78 ± 3.15		15.60 ± 3.43		54.88 ± 7.38		14.91 ± 3.21		12.64 ± 1.86	
<b>French maternal Language</b>												
No	17.35 ± 4.95	0.006	20.96 ± 2.96	0.472	16.68 ± 2.36	0.094	55.59 ± 7.04	0.548	14.90 ± 2.84	0.193	12.16 ± 2.13	0.017
Yes	18.98 ± 4.16		20.65 ± 3.01		15.95 ± 3.09		55.00 ± 6.95		14.25 ± 3.46		12.80 ± 1.86	
<b>Education</b>												
Primary/secondary	17.36 ± 4.36	<0.001	20.11 ± 3.30	<0.001	15.57 ± 3.23	<0.001	53.05 ± 7.47	<0.001	12.58 ± 3.68	<0.001	12.36 ± 1.92	<0.001
≤Three-year higher education	18.71 ± 4.12		20.48 ± 2.95		15.63 ± 3.15		54.84 ± 6.78		13.76 ± 3.49		12.87 ± 1.76	
>Three-year higher education	19.56 ± 4.05		20.94 ± 2.96		16.34 ± 2.94		56.86 ± 6.92		15.13 ± 3.09		12.83 ± 1.93	
<b>Deprivation (EPICES Index)</b>												
No	19.13 ± 4.08	<0.001	20.73 ± 3.02	0.003	15.97 ± 3.06	0.721	55.84 ± 7.00	<0.001	14.55 ± 3.36	<0.001	12.88 ± 1.83	<0.001
Yes	18.29 ± 4.42		20.25 ± 2.98		15.91 ± 3.17		54.46 ± 7.02		12.86 ± 3.59		12.39 ± 1.99	

# Conclusions et perspectives

- ❑ Une bonne fiabilité et validité des échelles
- ❑ Certaines limites
  - ✓ comparaison avec une mesure de LS standard
  - ✓ Population non hétérogène avec 97% de femmes
- ❑ Aspect pratique
  - ✓ Meilleure prise en charge globale et très tôt dans le parcours des soins