

FHIR and terminologies, Future perspectives from Medispring's EHR

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“Echange de données médicales structurées, que vous réserve
2021 ?”

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Medispring

“The EHR for caregivers, by caregivers”

Cooperative company

+2.000 physicians

Created by GPs, but also active with specialists (cardiologists, gynecologists, dermatologists, etc), Medical Houses, Guard Posts, Multidisciplinarity (physiotherapists, nurses, etc.) and used in Universities

Envisioned benefits of FHIR and terminologies adoption for Medispring users

Structured and semantically unambiguous data capture and exchange

Enabling better EHR softwares interoperability, care continuity and coordination

- Between GP softwares of different vendors : information exchange, better PMF, ...
- Between physicians & e-Health systems
- Between GP & specialists

Enabling knowledge-based decision support systems for prevention, diagnosis, therapy, ...

Some benefits of FHIR for your future practice

Between GP softwares

- Structured information exchange, better patient migration format (currently PMFs)

Between Practices & eHealth actors

- Allergies
- Vaccines
- Treatment regimens
- ...

More for technological gain than medical benefits

FHIR in your future practice

Between GPs & Specialists at home and at hospital

- More intelligent and integrable protocols
- FHIR metadata coming with protocols
- E.G. A patient is diagnosed with a specific pathology by a gastroenterologist
→ Automatically integrate the diagnosis and relevant details within the patient's record

Benefits of standardized terminologies

Enable **decision support** integrated into Medispring for prevention, diagnosis, therapy, ...

E.G. : Helping support for reasoned antibiotic prescription - BAPCOC's recommendations implemented as a therapeutic decision support system

Antibiotic recommendations for a codified diagnosis

The screenshot displays the Medispring interface for a consultation. The top navigation bar includes a search bar with 'covid-v2' and 'Trouver un patient'. The left sidebar shows a patient profile with a red box indicating an invalid national registration number, and a list of medical history items including 'PROBLÈMES DE SANTÉ', 'TRAITEMENTS EN COURS', 'ANTÉCÉDENTS', 'ALLERGIES MÉDICAMENTEUSES', 'INTOLÉRANCES MÉDICAMENTEUSES', 'FACTEURS DE RISQUE', 'VACCINS', and 'PRÉVENTION'. The main area shows a consultation record for '31/01/2021 Consultation du jour'. The 'Motifs' section lists 'S Subjectif', 'O Objectif', 'A Bronchite bactérienne QBP', 'P Plan d'action', and 'N Notes'. The 'ANTIBIOTHÉRAPIE BRONCHITE - début traitement' section provides treatment options: 'Premier choix' (Amoxicilline oral 1g 3x1/jour 7j, or Amoxicilline-acide clavulanique oral 875 mg 3x1/jour 7j) and 'Alternative' (Moxifloxacine 400 mg 1x1/jour 7j, or Azithromycine 500 mg 1x1/jour 3j). A 'Réévaluation après 48' section advises on hospitalization or home care based on severity. A reference link 'Réf. Séminaire SSAMG Bapcoc 2021, 02.02.21' is provided. A blue box contains text about the viral nature of acute bronchitis and antibiotic use, and another blue box lists criteria for hospitalization.

ANTIBIOTHÉRAPIE BRONCHITE - début traitement

Premier choix

- Sans comorbidités: **Amoxicilline oral 1g** 3x1/jour 7j.
- Avec comorbidité: Amoxicilline-acide clavulanique oral 875 mg, 3x1/jour, 7j.
- Pneumonie aspiration: Amoxicilline-acide clavulanique oral 875 mg, 3x1/jour, 7j.

Alternative

- Allergie à la pénicilline: Moxifloxacine 400 mg 1x1/jour 7j.
- Azithromycine 500 mg 1x1/jour 3j.

☐ **Réévaluation après 48**
Si état sévère : hospitaliser.
Si soins à domicile possible : envisager une pneumonie atypique et ajouter un macrolide et réévaluer après 48 heures . Si aucune amélioration : hospitaliser.

Ref. Séminaire SSAMG Bapcoc 2021, 02.02.21

La bronchite aiguë est presque toujours d'origine virale.
Les antibiotiques ne sont généralement pas indiqués en cas de bronchite aiguë (GRADE 1A).
Des antibiotiques peuvent être envisagés chez les patients à haut risque (tableau clinique inquiétant, patients oncologiques, Patients immunodéprimés, patients âgés polypathologiques). (GRADE 2C).

Une hospitalisation est nécessaire dans les cas suivants : (GRADE 1C*)
en présence de trois ou quatre des caractéristiques suivantes:
-âge > 65 ans.
-confusion, tachypnée > 30/
-min. tension systolique < 90 ou diastolique < 60 mmHg
-en cas de suspicion de pneumonie par aspiration dont les symptômes ne diminuent pas suffisamment lorsqu'elle est traitée avec de l'amoxicilline-acide clavulanique
-si l'état clinique se détériore après 48 heures de traitement antimicrobien

Mechanism

→ code Snomed for Bacterian Bronchitis

(+ subsumption inference)



✓♥	Acute infective bronchitis (16)
✓♥	Acute bacterial bronchitis (8)
♥	Acute chlamydial bronchitis
♥	Acute haemophilus influenzae bronchitis
♥	Acute Moraxella catarrhalis bronchitis
♥	Acute mycoplasmal bronchitis
✓♥	Acute streptococcal bronchitis (1)

→ Requires a (multi- terminology server)

→ Identification of candidates medication codes

→ e.g. counter-indications alerts, suggestion for re-evaluation after 48 hours

Our roadmap

- We're ready for the PoC for Allergy (interoperability)
- Creating partnerships for Decision Support
- Developing partnerships with hospitals for advanced interoperability

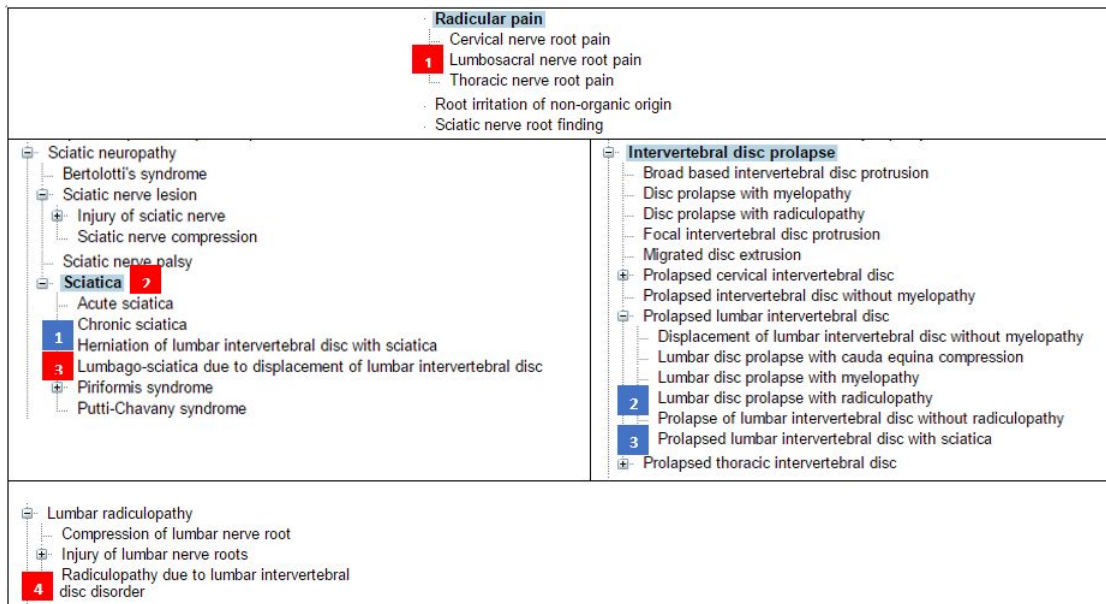
Thank you for your attention.

Thank you for your attention.
Any questions?

Annexes

Problems to solve together

1) Errors and logical inconsistencies in Snomed



There are 5 types of errors

1. Nr1 blue is in the wrong hierarchy because it is not a subtype of sciatica but a subtype of disc herniation.

2. Red 1 is identical with red 2 (2 codes for the same entity; which one to encode?)

3. The 3 blues are identical (3 codes for the same entity; which encoder?)

4. The 3 blues and the red nr 3 and nr 4 represents the same clinical situation of a patient (when instantiated becomes iso-semantic)

5. The codes are insufficient f e.g.: "right L1 sciatica".

Name	Flags	Card.	Type	Description & Constraints
AllergyIntolerance	I TU		DomainResource	<p>Allergy or Intolerance (generally: Risk of adverse reaction to a substance)</p> <p>+ Rule: <i>AllergyIntolerance.clinicalStatus</i> SHALL be present if <i>verificationStatus</i> is not <i>unconfirmed</i></p> <p>+ Rule: <i>AllergyIntolerance.clinicalStatus</i> SHALL NOT be present if <i>verificationStatus</i> is <i>unconfirmed</i></p> <p>Elements defined in Ancestors: <i>id</i>, <i>meta</i>, <i>implicitRules</i>, <i>language</i>, <i>text</i>, <i>contained</i>, <i>extension</i></p>
identifier	Σ	0..*	Identifier	External ids for this item
clinicalStatus	?! Σ I	0..1	CodeableConcept	<p>active inactive resolved</p> <p>AllergyIntolerance Clinical Status Codes (Required)</p>
verificationStatus	?! Σ I	0..1	CodeableConcept	<p>unconfirmed confirmed refuted entered-in-error</p> <p>AllergyIntolerance Verification Status Codes (Required)</p>
type	Σ	0..1	code	<p>allergy intolerance - Underlying mechanism (if known)</p> <p>AllergyIntoleranceType (Required)</p>
category	Σ	0..*	code	<p>food medication environment biologic</p> <p>AllergyIntoleranceCategory (Required)</p>
criticality	Σ	0..1	code	<p>low high unable-to-assess</p> <p>AllergyIntoleranceCriticality (Required)</p>
code	Σ	0..1	CodeableConcept	<p>Code that identifies the allergy or intolerance</p> <p>AllergyIntolerance Substance/Product, Condition and Negation Codes (Example)</p>