



Happy & Joyful  
New Year!

**IHE<sup>®</sup>**  
**EUROPE**

Integrating  
the Healthcare  
Enterprise



- Please keep your microphone **muted**
- **Questions during the session?** Please use the chat box. We will address the questions in the second part of the webinar
- Note that this webinar will be **recorded** and made available on our IHE-Europe [YouTube channel](#)
- Slides will be **sent to you by email** early next week

**IHE<sup>®</sup>**

**EUROPE**



**WEBINARS**



# Roundtable on medication scheme

**12 January 2024 1PM CET**  
**IHE-Europe Monthly Webinar**

## Agenda

### 1. General medication context in Europe

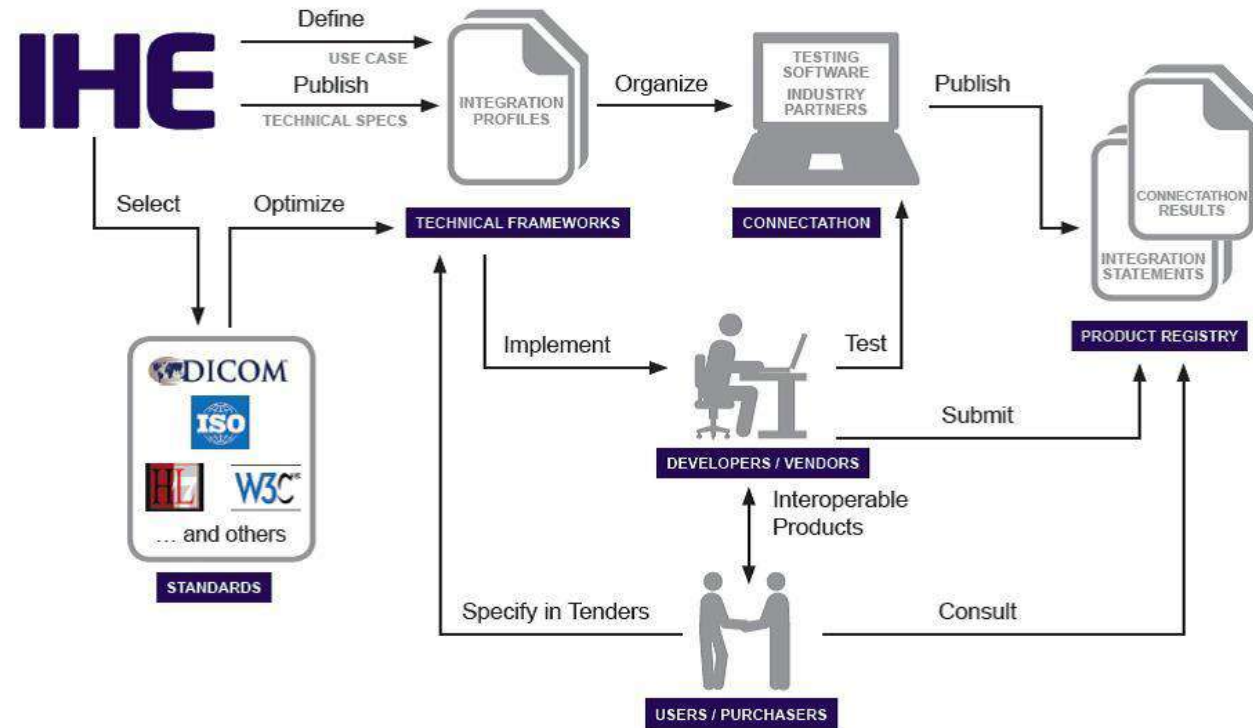
- Presentation IHE Pharmacy

### 2. Presentation from each country

- Estonia
- Belgium
- Switzerland
- The Netherlands

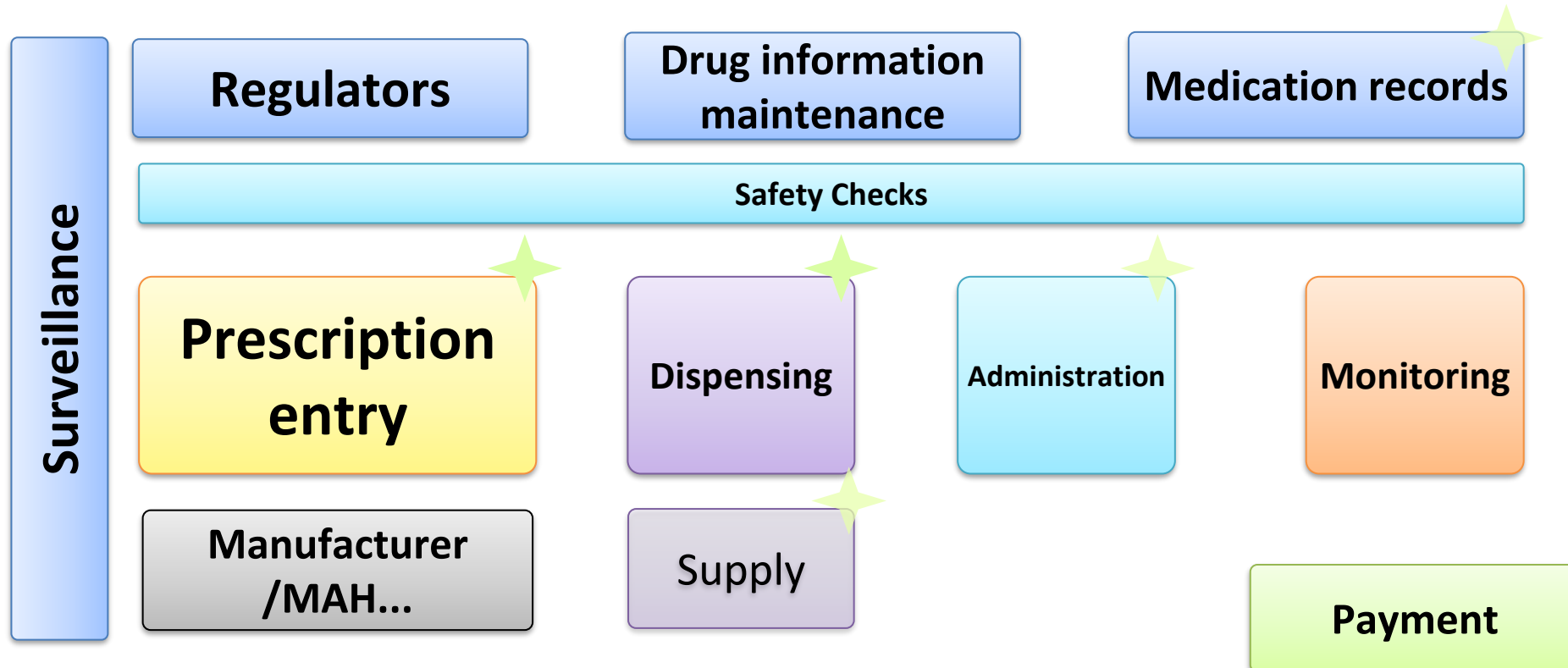
### 3. Discussion

# IHE - establishing and validating real-world interoperability



# Pharmacy interoperability

What types of systems are connected?



(adapted from ISO WG6 internal documentation)



# IHE profiles eligible for referencing in public procurement

29.7.2015

EN

Official Journal of the European Union

L 199/43

COMMISSION DECISION (EU) 2015/1302

of 28 July 2015

on the identification of 'Integrating the Healthcare Enterprise' profiles for  
referencing in public procurement

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. IHE XCPD: Cross-Community Patient Discovery;</li> <li>2. IHE XCA: Cross-Community Access;</li> <li>3. IHE XCF: Cross-Community Fetch;</li> <li>4. IHE XDR: Cross-Enterprise Document Reliable Interchange;</li> <li>5. IHE CT: Consistent Time;</li> <li>6. IHE ATNA: Audit Trail and Node Authentication;</li> <li>7. IHE BPPC: Basic Patient Privacy Consents;</li> <li>8. IHE XUA: Cross-Enterprise User Assertion;</li> <li><b>9. IHE PRE: Pharmacy Prescription;</b></li> <li><b>10. IHE DIS: Pharmacy Dispense;</b></li> <li>11. IHE XPHR: Exchange of Personal Health Record Content;</li> <li>12. IHE XD-MS: Cross-Enterprise Sharing of Medical Summaries Integration Profile;</li> <li>13. IHE XD-SD: Cross-Enterprise Sharing of Scanned Documents;</li> </ol> | <ol style="list-style-type: none"> <li>14. IHE PIX: Patient Identifier Cross-Referencing;</li> <li>15. IHE PDQ: Patient Demographics Query;</li> <li>16. IHE XDS.b: Cross-Enterprise Document Sharing;</li> <li>17. IHE XDS-I.b: Cross-Enterprise Document Sharing for Imaging;</li> <li>18. IHE XD-LAB: Laboratory Reports;</li> <li>19. IHE XDM: Cross-Enterprise Document Media Interchange;</li> <li>20. IHE SVS: Sharing Value Sets;</li> <li>21. IHE SWF: Radiology Scheduled Workflow;</li> <li>22. IHE SWF.b: Radiology Scheduled Workflow;</li> <li>23. IHE PIR: Patient Information Reconciliation;</li> <li>24. IHE PAM: Patient Administration Management;</li> <li>25. IHE LTW: Laboratory Testing Workflow;</li> <li>26. IHE LCSD: Laboratory Code Sets Distribution;</li> <li>27. IHE LWA: Laboratory Analytical Workflow.</li> </ol> |
|---|--|

## Domain: Pharmacy

- IHE Pharmacy has been mostly driven by European participants
- National and cross-border specifications
- Standards (HL7 V2, CDA, FHIR)
- IHE Pharmacy
  - Current profiles:
    - Prescription
    - Dispense
    - Administration
    - Medication Lists
- Link with medicinal products and UNICOM; Other projects e.g. Xt-EHR
- Medication scheme: Why it is important?
  - Challenges?






# Medication Overview: list of treatments

## Ravimiskeem



Prindi

Ajalugu

Toimeaine/Ravim	Ravimvorm	Tüüp	Annustamine				Retsepti kehtivus	Jääk		
✓ Aspart-insuliin (NovoRapid Flexpen)	inj. pen	P	H: 5 TÜ	L: 6 TÜ	Õ: 5 TÜ	Õ: 5 TÜ	10.01.2023	12 / 34		
✓ Metformiin Patsiendi sõnul	polüm. tab	P	H: 500 mg		Õ: 500 mg		-	-	 5	
⚠️ Tiiamiin + püridoksiin + tsüanokobalamiin + lidokaiin (Milgamma N)	inj.	P	2 x nädalas				10.02.2023	24 / 10		
✓ Perindopriil + amlodipiin + indapamiid (Triplixam)	polüm. tab	P	H: (10 + 10 + 2,5) mg				10.02.2023	22 / 12	 2	
⚠️ Fenoksümetüülpenitsilliin (Ospen)	polüm. tab	F	10 päeva H: 1 000 000 RÜ   L: 1 000 000 RÜ   Õ: 1 000 000 RÜ				10.02.2023	10 / 20	 10	
⚠️ Pregabaliin (Pragiola)	kaps.	M	⊕ 7 etappi				10.02.2023	5 / 12		
✓ Alprasolaam	tab.	Ü	0,5 mg				10.02.2023	34 / 12		

# Prescription List vs Medication Overview

## Prescription List



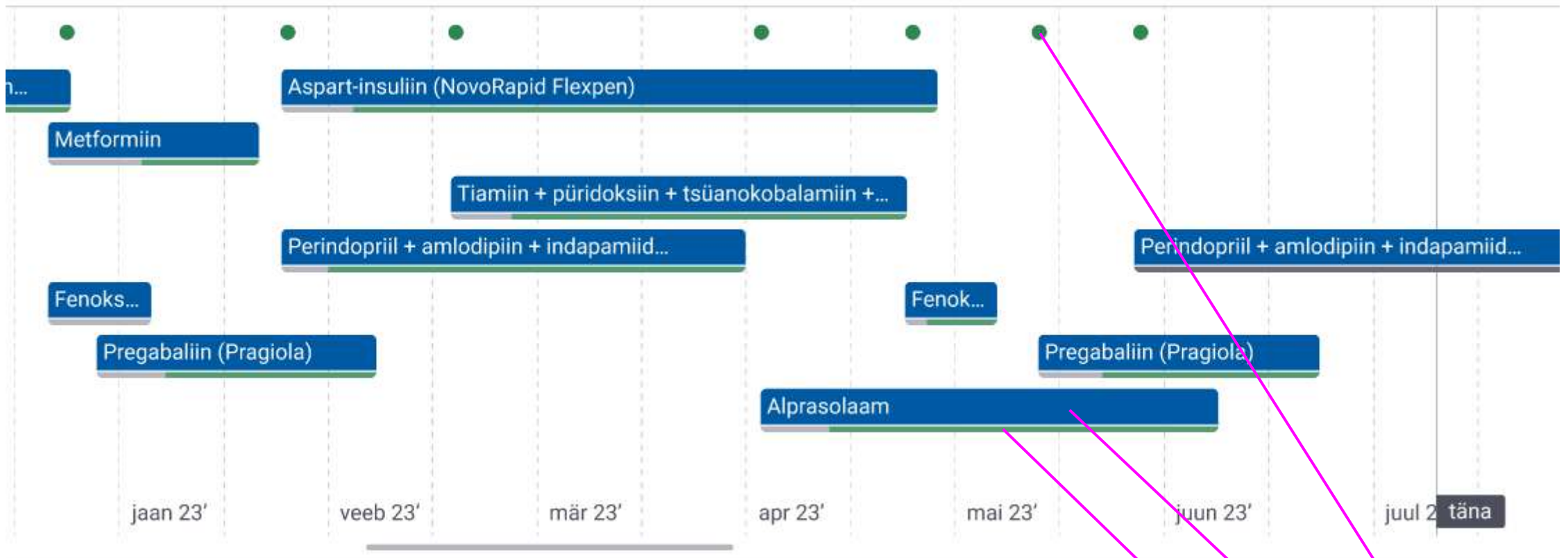
## Medication Scheme

Prescribed	Dosage	Dispensed product	Indication	Issue date	Prescriber
Nitrofurantoin 50mg tablet	1 tablet a day, continuously	NITROFURANTOIN ORIFARM	Cystitis	16.10.2023	E. Kuusk
Nitrofurantoin 50mg tablet	1 tablet a day, continuously	NIFURANTIN 50MG	Cystitis	22.06.2023	E. Kuusk
Nitrofurantoin 50mg tablet	1 tablet a day, continuously	NITROFURANTOIN ORIFARM	Cystitis	21.03.2023	E. Kuusk
Amoxicillin 875mg + clavulanic acid 125mg	1 tablet twice a day, 7 days	AUGMENTIN	Cystitis	22.12.2023	L. Gustav
Nitrofurantoin 50mg tablet	1 tablet a day, continuously	NITROFURANTOIN ORIFARM	Cystitis	18.01.2023	E. Kuusk
Nitrofurantoin 50mg tablet	1 tablet a day, continuously	NITROFURANTOIN ORIFARM	Cystitis	12.09.2022	E. Kuusk
Nitrofurantoin 50mg tablet	1 tablet a day, continuously	NITROFURANTOIN ORIFARM	Cystitis	08.06.2022	A. Tee

Treatment	Dosage	Indication	Start date	Stock	Author
Nitrofurantoin 50mg	1 tablet a day, <b>continuously</b>	Cystitis prevention	20.10.2014	10 days	M. Sarkov
Amoxicillin 875mg + clavulanic acid 125mg	1 tablet twice a day, 7 days	Cystitis	22.12.2023	0	L. Gustav

- Better overview
- Possibility to add OTC medications
- Calculated from prescriptions OR a starting point for prescribing
- Suitable for patient summary

## Current treatments or history line



- Agreed concept of medication schema/overview
- Actual implementations may be very different
- International spec is for querying the list of current medications

change in treatment

treatment line

actual(probable) intake



## General overview

- **Central overview of medicinal treatments** (current and any time in history)
- **Starting point** for new medicinal treatments, easy to change/continue/analyse/cancel the treatment.
- **Communication** between doctor and pharmacist
- Includes **patient reported** medications
- Remaining amount and other **run-time calculations**
- **Drug-to-drug interaction** detector

## Main Challenges

- **Our first national full-FHIR service:** all supporting services are developing in parallel.
- **Integrating legacy solutions.**
- **Business rules** to handle all the complexity of updating the data.
- Similar data in multiple layers -> **difficult UI design.**

## Infrastructure and implementation

- **FHIR R5**
- **User interface** for national HCP portal
- Prescription centre from 2010, not changed
- **Crossborder** prescription/dispensation/PS

## Future outlooks and collaboration

- **Current status:** reconciliation of prescriptions in web app
- **2024:** medication schema becomes the main source for medication based treatments, incl history.
- **2024/2025:** medication schema feeds into EU Patient Summary medication section
- **2025 onwards:** hospital medication



## General overview

- Medication Schema is perceived as one of the most important areas, also in Belgium (we had the Summary and Medication Schema - launched several years ago, in KMEHR)
- Initial specs: Schema is authored by GP
- Part of the “Modular Summary” CareSet
- Big shift: Schema as initiator of treatment

## Main Challenges

- Multi-purpose nature of the schema (this is a global challenge)
- Authorship / responsibility of the entire schema
- Access control
- Medication codes
  - National codes
  - Evolution of a medication line

## Infrastructure and implementation

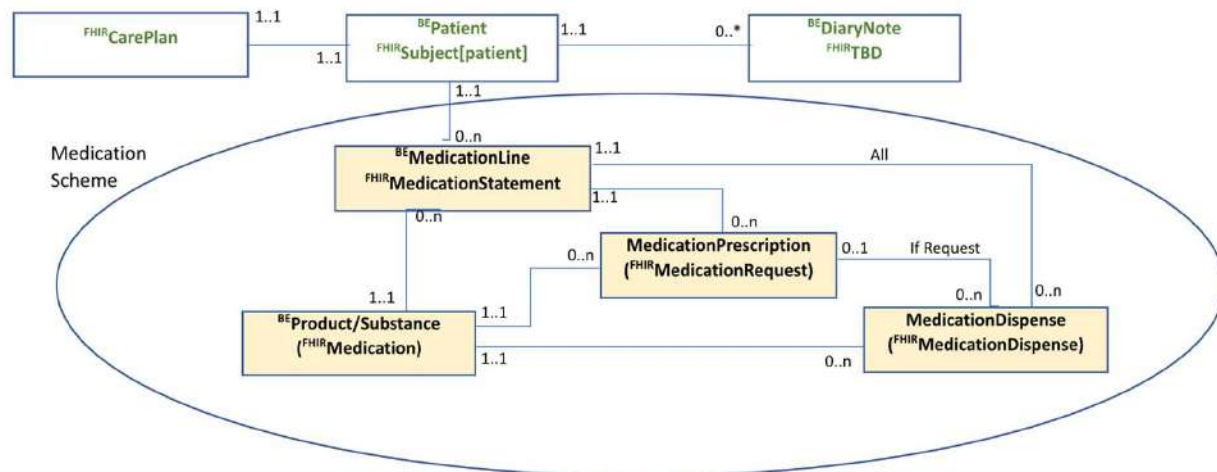
Medication Schema + Medication Lines  
Link to Prescription and others

## Future outlooks and collaboration

Converge with IHE specifications, with possible non-breaking gaps

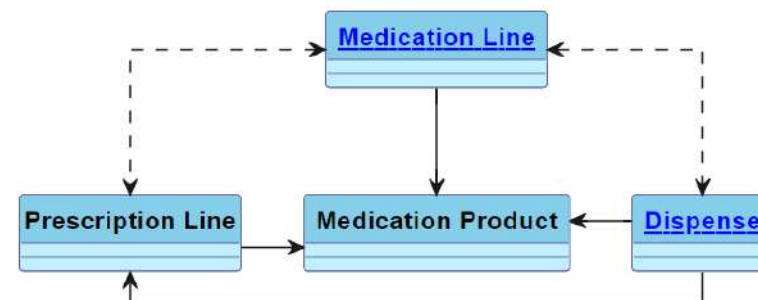


## General overview



### 16.3.1.1 Relationship with other elements:

The Medication Line relates to the other data structures in the following way:



- **Medication Line** may refer to a **Medication Dispense** that occurs in the treatment.
- **Medication Dispense** may be the trigger for creating or updating a **Medication Line**.





## General overview

- Medication is a key topic for continuity of care
- Medication “problems” are responsible of a significant amount of emergency care situations (~10%) → potential source of major improvement
- eMedication is one of the “killer apps” for the take off of the Electronic Patient Record, offering high value information to healthcare professionals

## Main Challenges

- Standards adoption
- Medication reconciliation: implementation by primary systems, execution by physicians [workload, responsibility]
- Deep integration into primary systems (costs, competencies)
- Onboarding of other regions (pilot in one region)

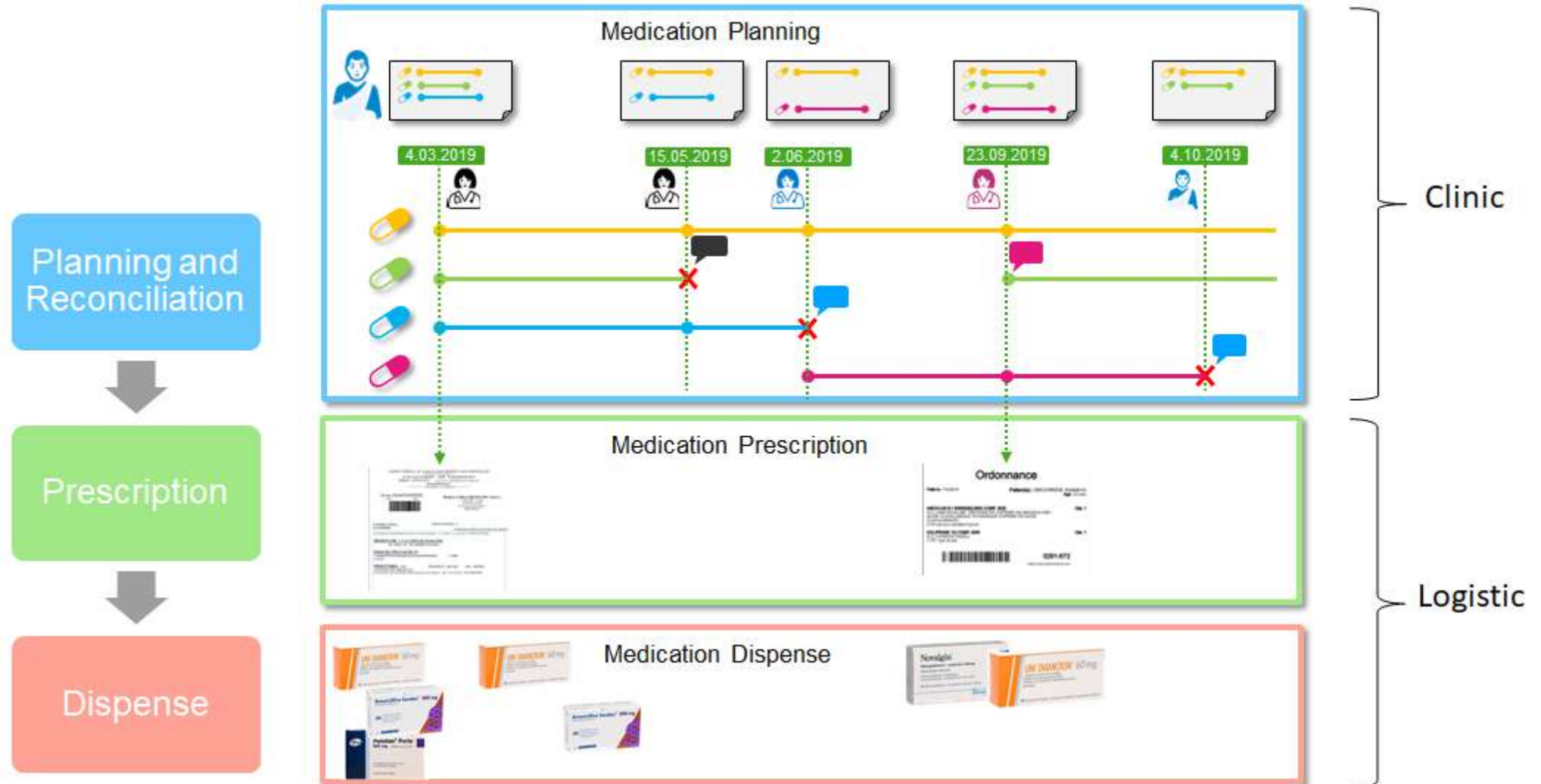
## Infrastructure and implementation

- Previous (too) limited prototype (2012-2017)
- Core infrastructure exists: EPR communities
- PoC in production planned for 3Q2024 (at least 2 hospitals, currently missing pharmacies & GPs) → only 1 community/5 cantons
- Close follow-up by federal government → hope to generalize the approach in the future

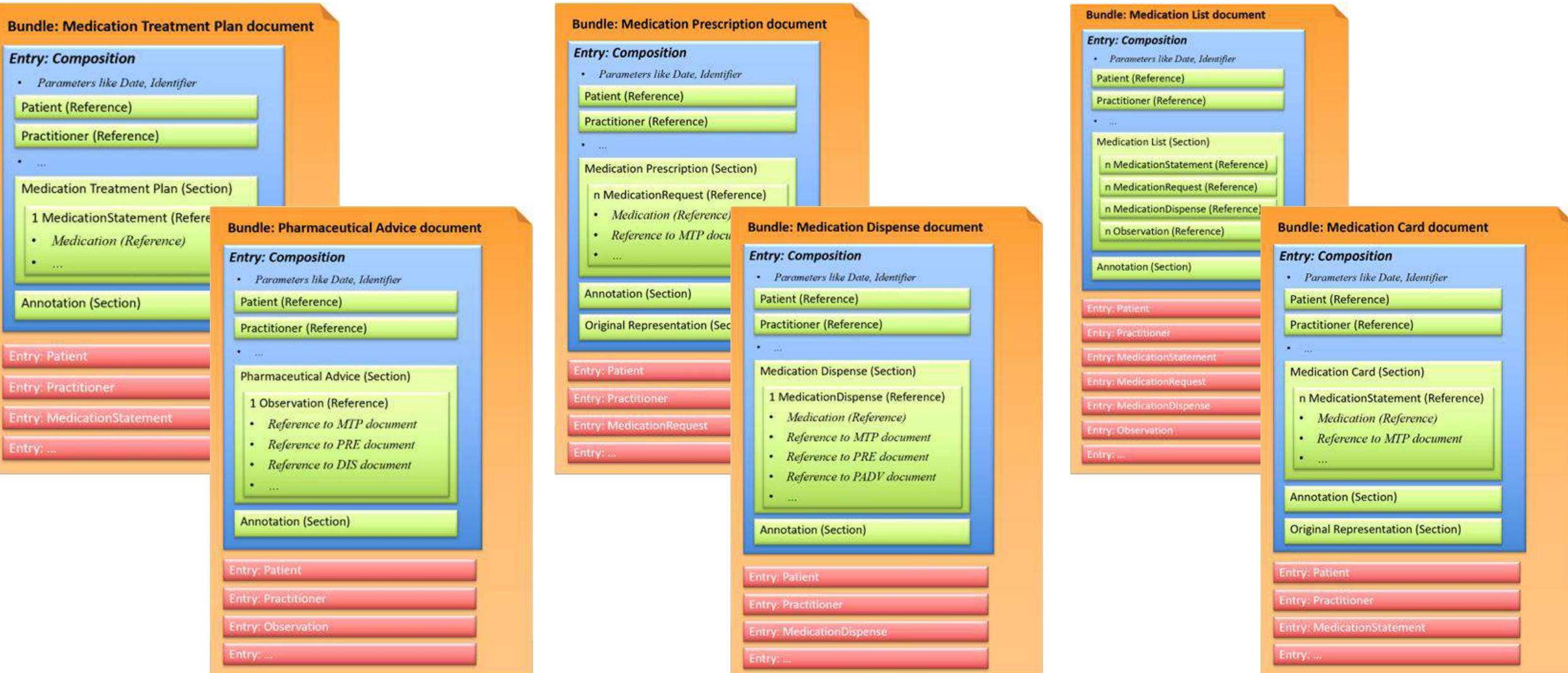
## Future outlooks and collaboration

- Converge towards forthcoming FHIR-based IHE Pharmacy profiles (currently national profiles based on HL7 FHIR R4 resources mapping CDA profiles)
- Sharing ideas and experience around concrete use cases
- Lowering the entrance step for primary systems by sharing documentation, tools, ...

# Content of the shared medication treatment plan



# FHIR Resources representing former IHE Pharmacy CDA documents





## General overview

- Why: 75 avoidable hospital admissions per day
- Goal: up-to-date medication overview
- How:
  - separating therapeutic from logistic information
  - decentralized approach
- MP9 program, Kickstart in two regions

## Main Challenges

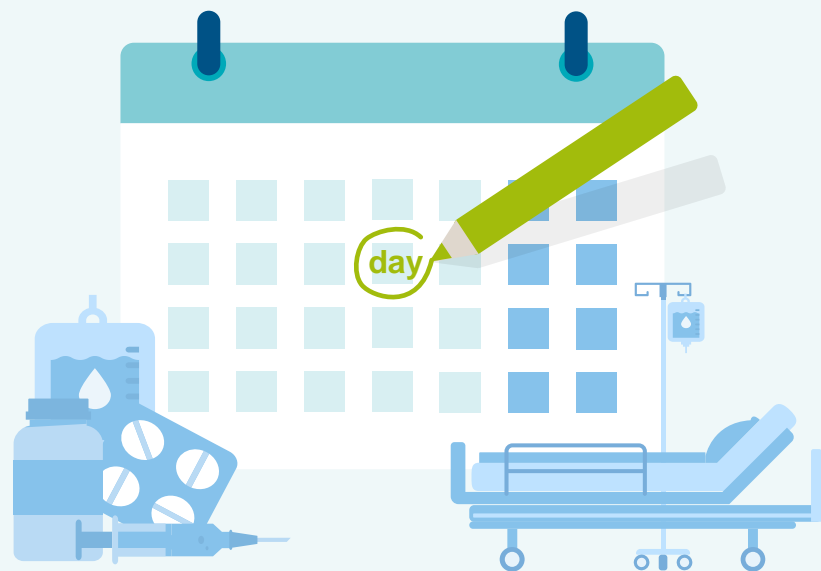
- Distributed care
- Consolidation and reconciliation
- Hybrid situation

## Infrastructure and implementation

- HL7v3 CDA and FHIR R4
- Now: EDIFACT, HL7v3 messaging, FHIR STU3
- Translating / mapping
- National infrastructure for Kickstart
- Participating vendors in varying healthcare sectors

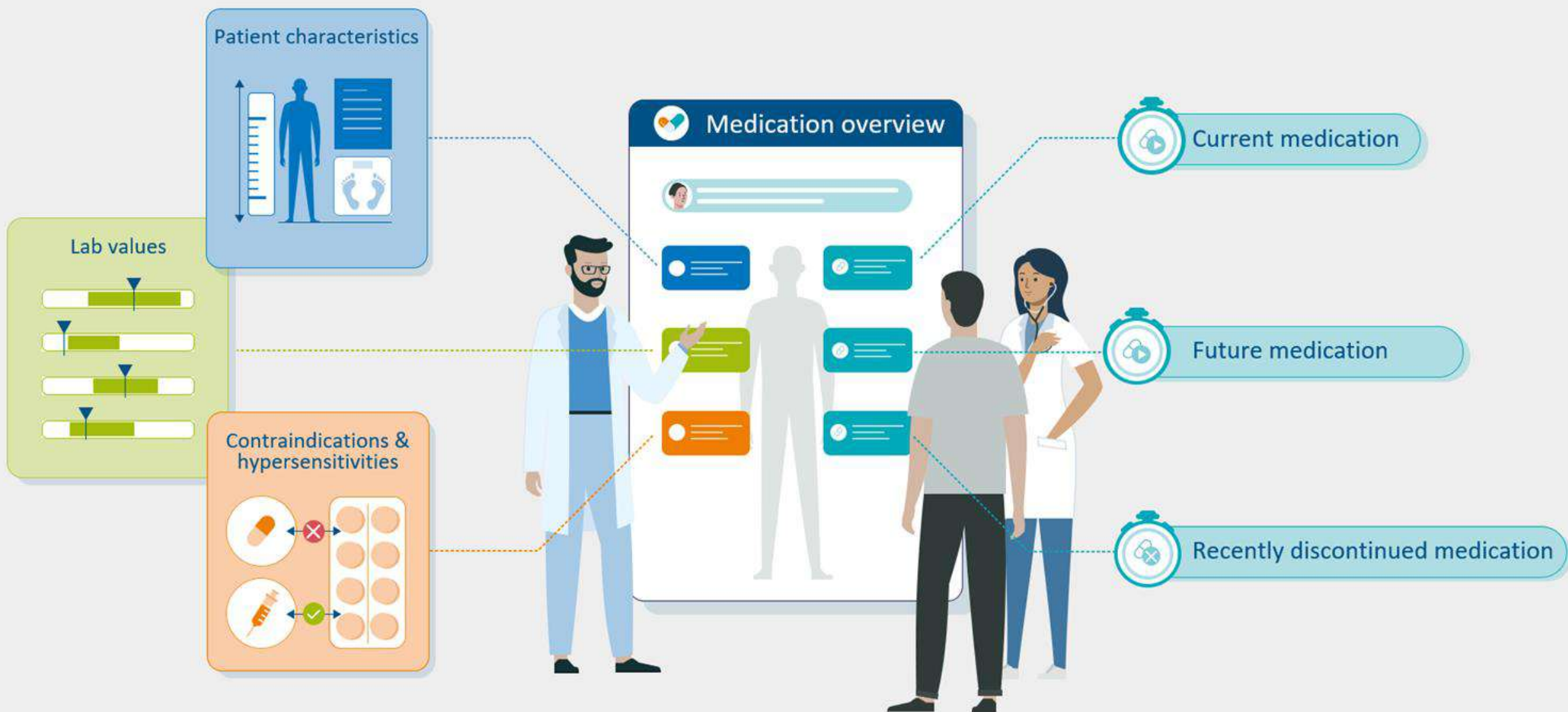
## Future outlooks and collaboration

- Regional to nationwide
- Other infrastructures?



**75** avoidable hospital admissions  
per day due to medication  
errors









## Current situation

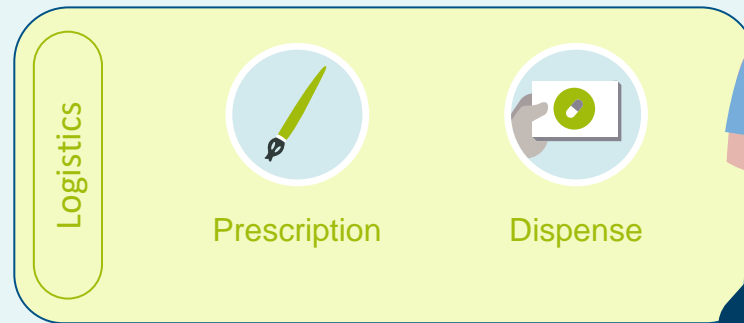


Medication process 6

- Too much
  - Logistics driven (Baxter)
  - Distill relevance
- Not enough
  - Dosage reduction
  - Stop



## Current situation

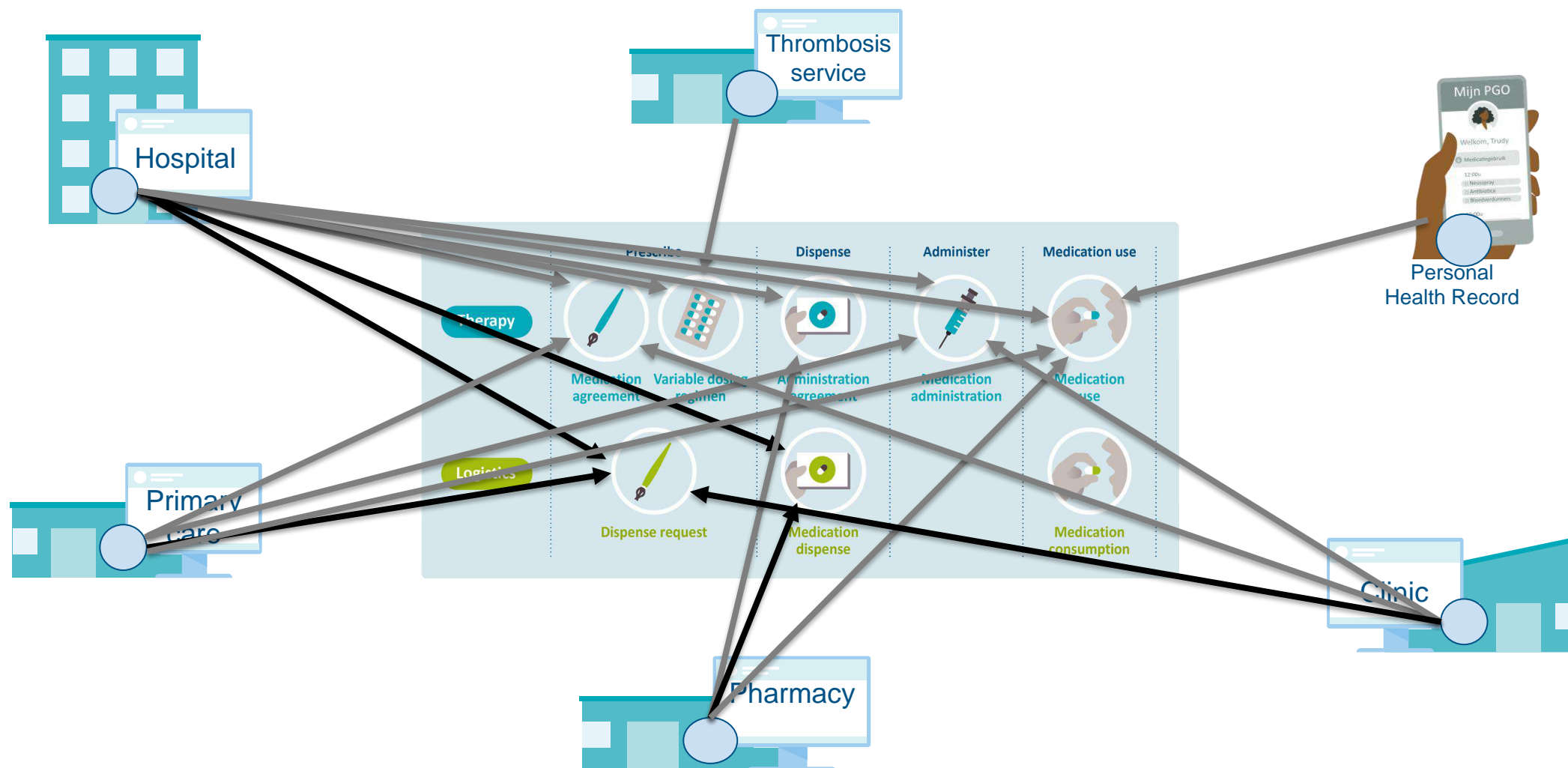


Medication process 6

## Future situation

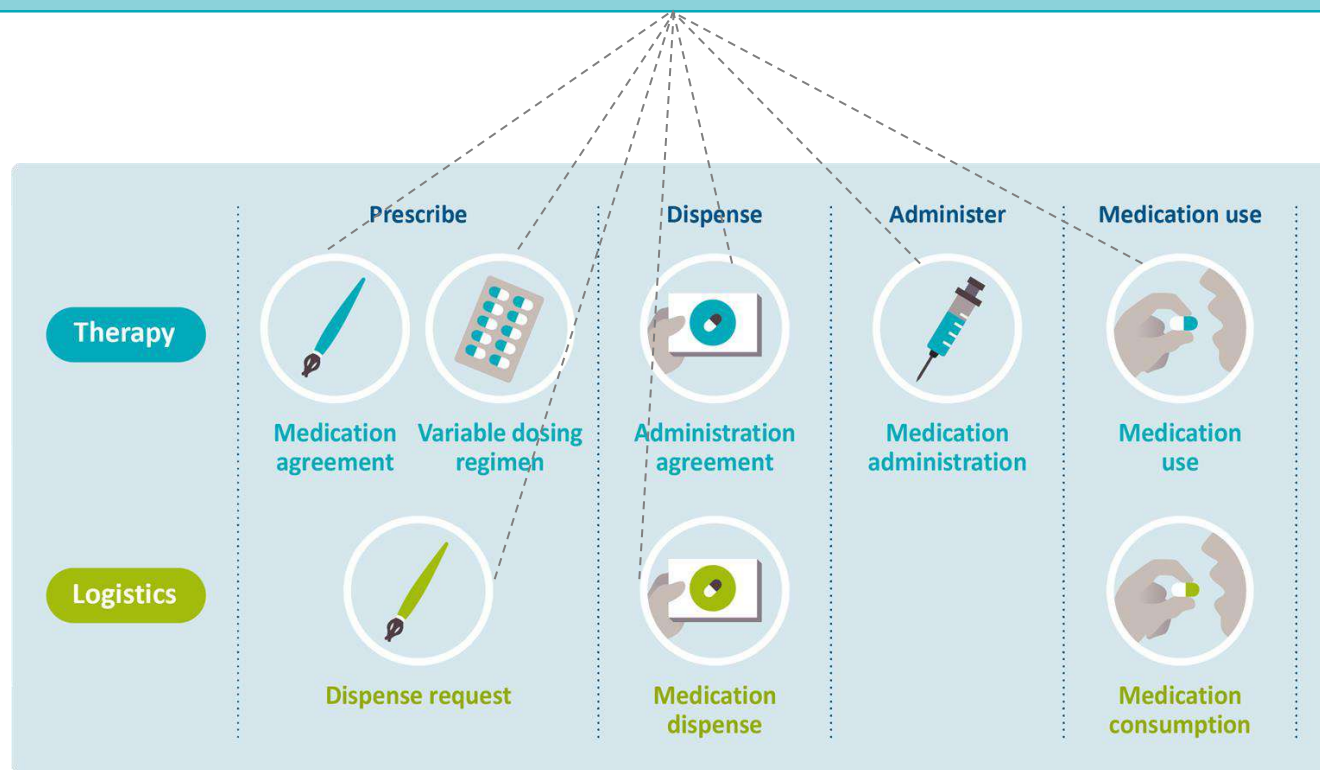


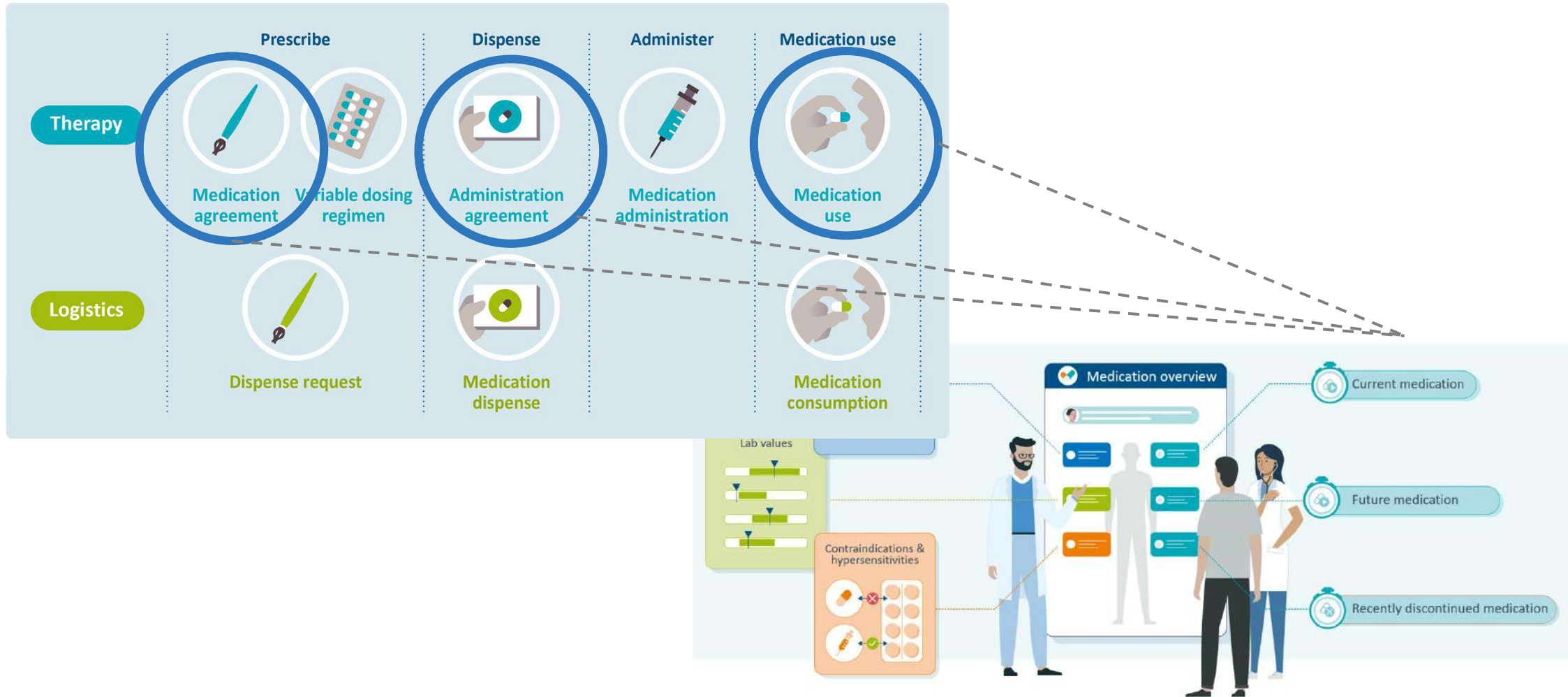
Medication process 9

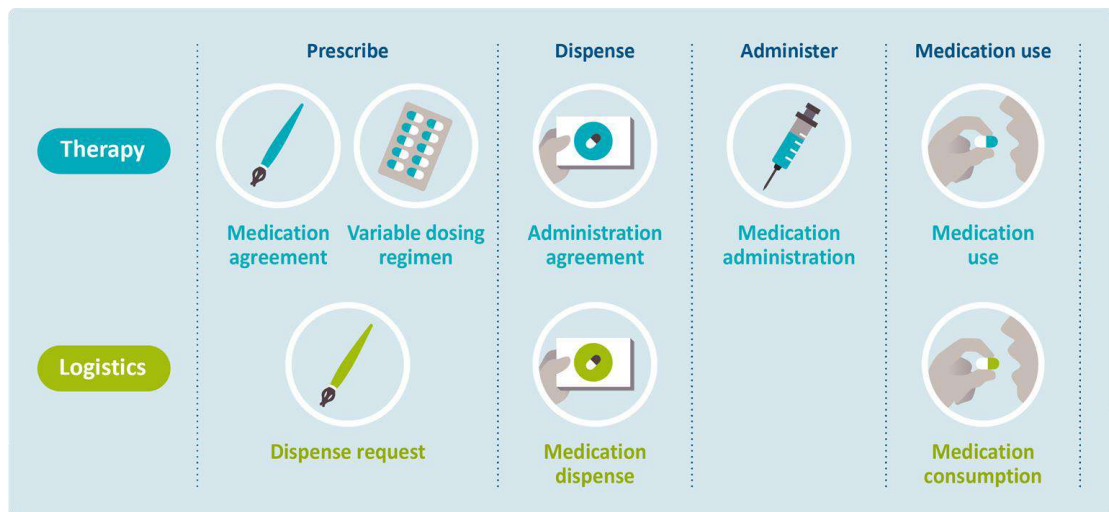




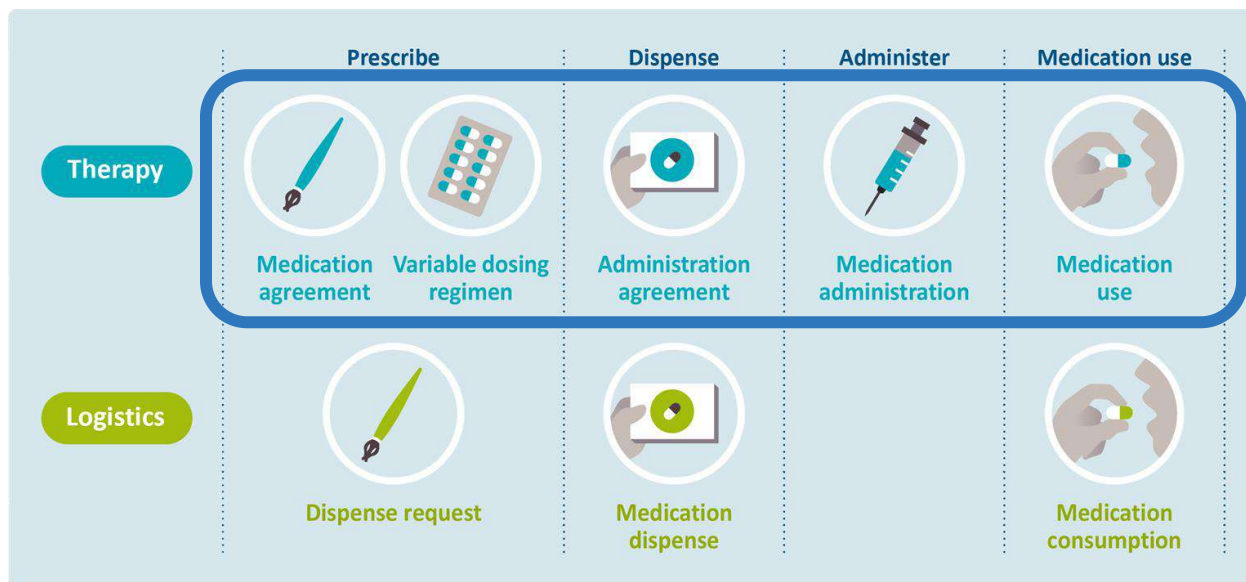
## Medication treatment



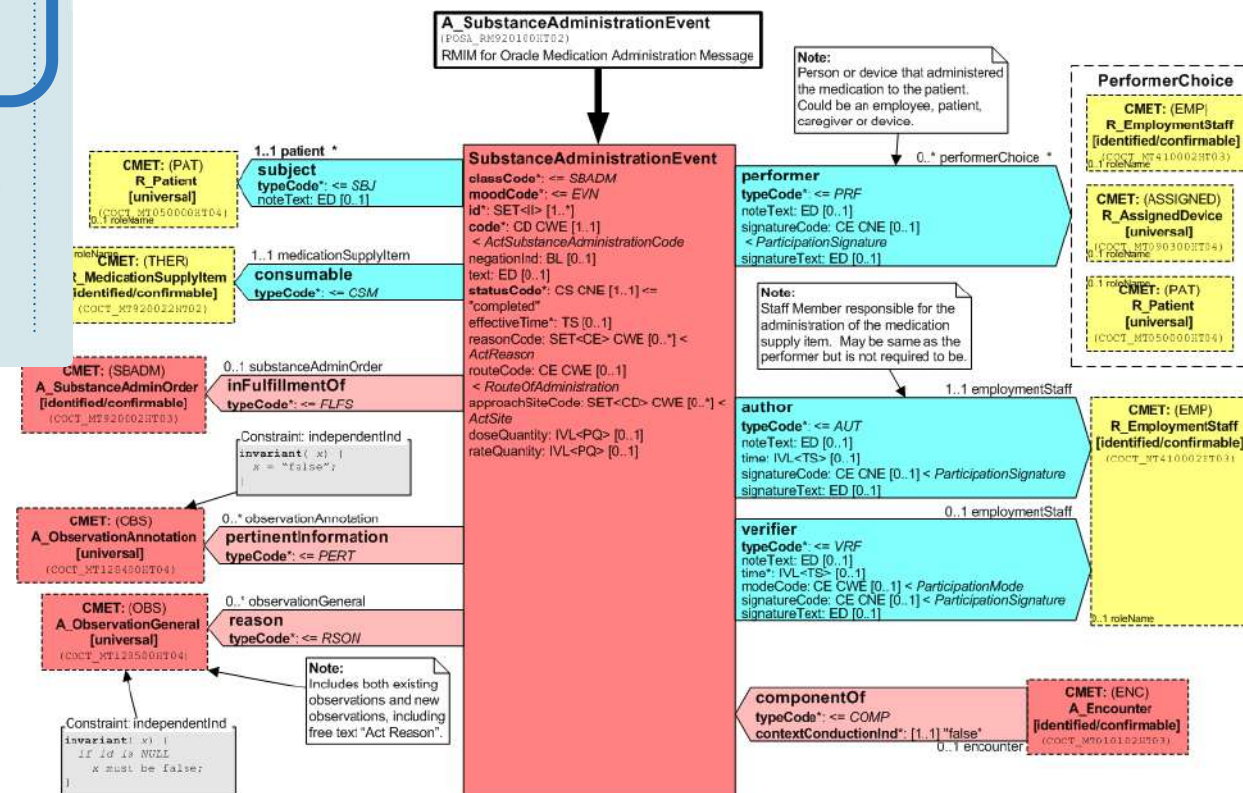


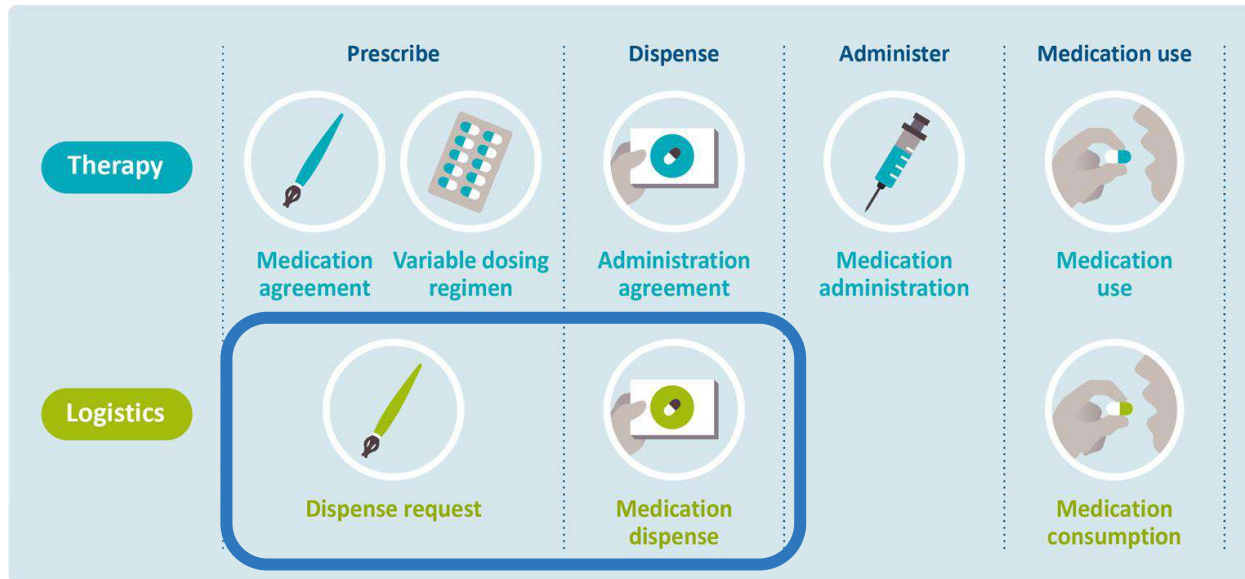






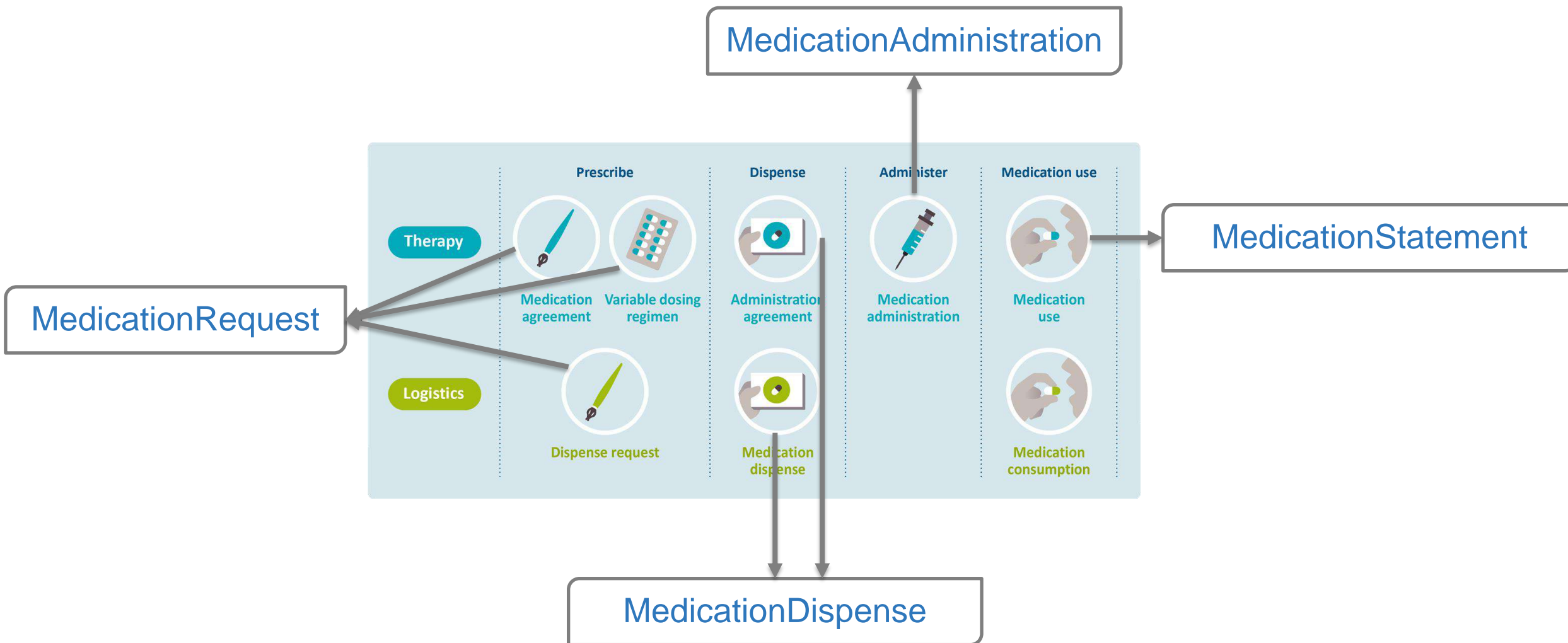
## SubstanceAdministration

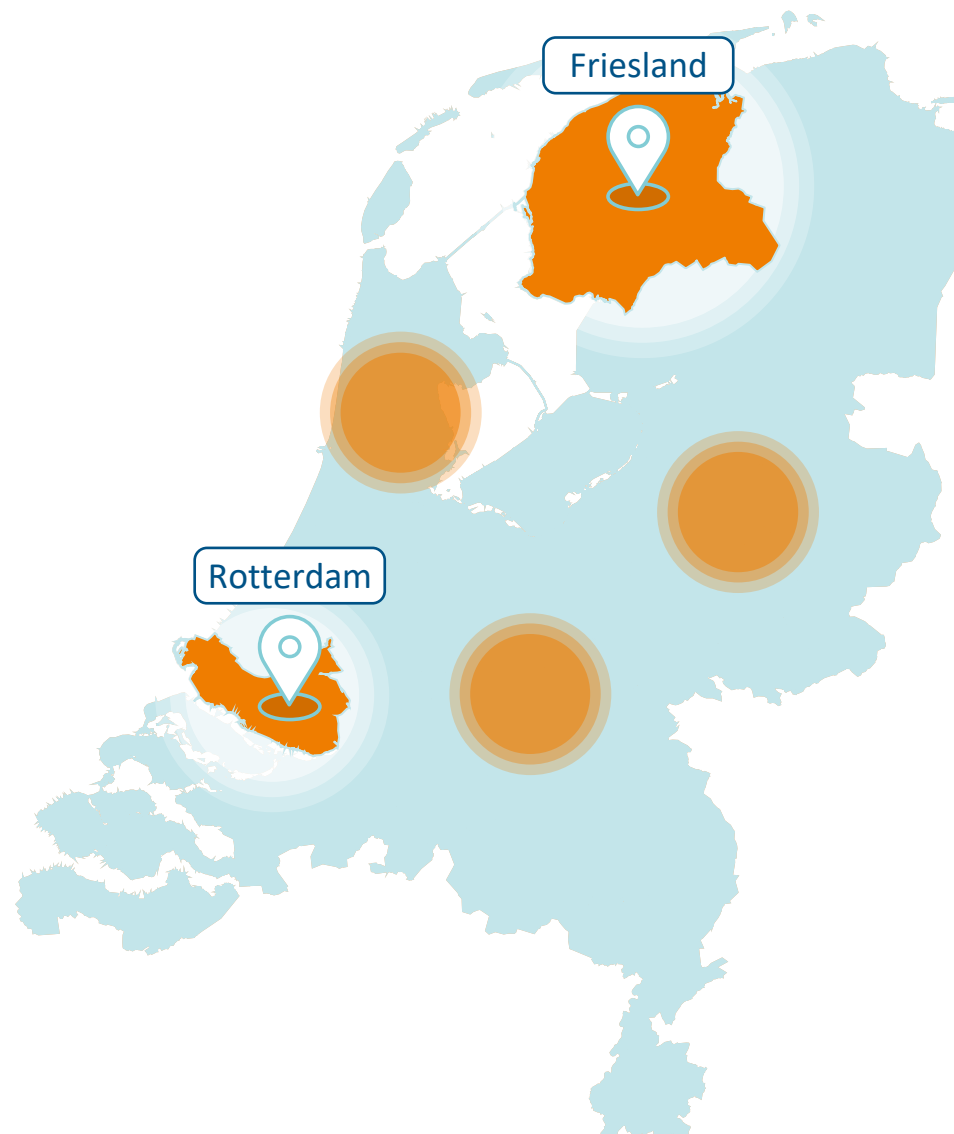
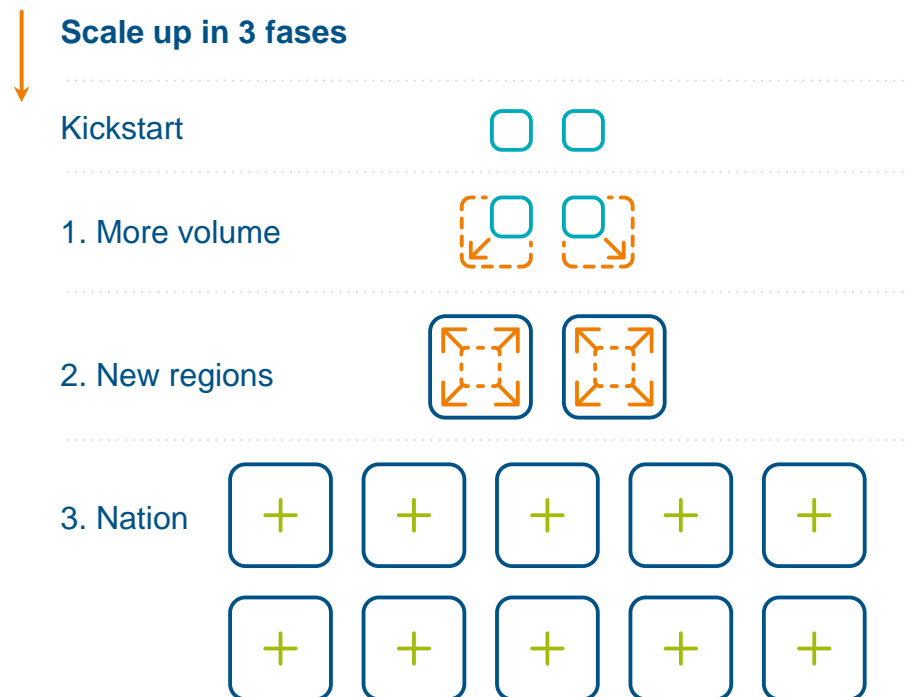




## Supply













## General overview

- Why: 75 avoidable hospital admissions per day
- Goal: up-to-date medication overview
- How:
  - separating therapeutic from logistic information
  - decentralized approach
- MP9 program, Kickstart in two regions

## Main Challenges

- Distributed care
- Consolidation and reconciliation
- Hybrid situation

## Infrastructure and implementation

- HL7v3 CDA and FHIR R4
- Legacy EDIFACT, HL7v3 messaging
- Also FHIR STU3
- Translating / mapping
- National infrastructure for Kickstart
- Participating vendors in varying healthcare sectors

## Future outlooks and collaboration

- Regional to nationwide
- Other infrastructures?



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## Save the dates !

IHE-Monthly webinars: every 2nd or 3rd Friday at 1PM CET

Next one: 9 Feb 2024 1PM CET

Check out the **agenda & register** here:

[www.ihe-europe.net/IHE\\_Europe\\_Webinars](http://www.ihe-europe.net/IHE_Europe_Webinars)

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