XpanDH

Expanding Digital Health through a pan-European EHRxF-based Ecosystem

D4.2 – (D4.1.2) Adoption opportunities, challenges and barrier

WP4 – Feasibility & Experimentation

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Present the main methodological approaches in bullet point format	- Workshops - Online Surveys
What were the main findings or take-away messages? What implications does it have for the XpanDH project?	Assessment of practice for production and exchange health information in EEHRxF.
Which project stakeholder group would benefit the most from the document and why?	
List any relevant organizations or social media accounts for wider visibility	

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List of abbreviations

Acronym	Description
ARIA	Azienda Regionale per l'Innovazionee gli Acquisti
CDA	Clinical Document Architecture
CEN/TH	European Committee for Standardization
CHTMAD	Centro Hospitalar de Trás-os-Montes e Alto Douro
CHUdSA	Centro Hospitalar Universitário de Santo António
D	Deliverable
KETEKNY/Greek DRG Institute	Center of Documentation and Costing of Hospital Services (Greek)
EC	European Commission
EEHRxF	European Electronic Health Record Exchange Format
EHDS	European Health Data Space
EHMA	European Health Management Association
EHR	Electronic Health Record
ELGA	Electronic Health Record Austria
EU	European Union
eHN	eHealth Network
FHIR	Fast Healthcare Interoperability Resources
FTGM	Fondazione toscana gabriele monasterio
FTSS	Fundacion TicSalut
HL7	Health Level 7
Hope	Federation Europeenee des Hopitaux et des Soins de Sante
HSE	Health Service Executive HSE
ICD-10	International Classification of Diseases - 10th Revision
ICD-11	International Classification of Diseases - 11st Revision
IDIKA	Greek e-Government Center for Social Security Services
IG	Implementation Guide
I~HD	The European Institute forInnovation through Health Data
IHE-EUR	Integrating the Healthcare Europe
ISCTE	University Institute of Lisbon
IT	Information Technology
LOINC	Logical Observation Identifiers Names and Codes
MoH	Ministry of Health
MS	Member States
NCPeH	National Contact Point for eHealth
NCZI	Slovakia National Center for Health Information
NeHA	Ethniki archi ilektronikis igeias
OKFO	National Directorate General for Hospitals
SAS	Andalusia Health Service
SNOMED-CT	Systemized Nomenclature of Medicine – Clinical Terms
SPMS	Portuguese Shared Services of the Ministry of Health
SRS	Secretaria Regional da Saude
TTSA	Telemedicine technologies

UAS	University Applied Sciences
UiO	University of Oslo
UNINOVA	Instituto de Desenvolvimento de Novas Tecnologias
WP	Work Package

Executive summary

This deliverable focuses on the findings, challenges and barriers for European Electronic Health Record Exchange Format (EEHRxF) adoption identified in the adoption workshops conducted within the context of WP4 - Feasibility & Experimentation, including all the XpanDH bubbles.

More than ten workshops were conducted, involving project partners, new associated partners, and external organizations. The main discussions held during these workshops are presented along with the key conclusions regarding adoption, challenges and barriers.

Additionally, to enhance the information gathered on the level of alignment of organisations with the EEHRxF, three online surveys are available, each focused on specific priority categories: patient summary, laboratory report, and hospital discharge report. The initial results of these surveys are presented, with the surveys remaining online to collect further responses.

1 Introduction

This deliverable is focused on the adoption opportunities, challenges and barriers workshops performed around the European Electronic Health Records Exchange Format (EEHRxF) in XpanDH. The results of these workshops are presented within the scope of task 4.1. Furthermore, the results of the online surveys available to collect information regarding the assessment of practice for production and exchange of health information in three specific priority categories are also presented.

1.1 Background

The project XpanDH aims at mobilizing and building capacity in individuals and organisations to create, adapt and explore purposeful use of interoperable digital health solutions based on a shared adoption of the EEHRxF across Europe. To achieve this objective, the project collaborates with a set of partners interested in working around the EEHRxF, the so-called "early adopters", which constitute the X-Bubbles. From a practical point of view, these organisations represent a sample of EU landscape, in what regards the needs of EEHRxF, based on their organisation and technical settings and aims. The concrete results of the work developed by the X-Bubbles can be consulted in *D4.3 – (D4.2) XpanDH Feasibility Demonstrators*.

In addition to the X-Bubbles, during the course of the project, other organizations expressed interest and joined the project as associated partners. These partners were integrated into the organized workshops, with the aim of discussing the results achieved and gathering new perspectives on the adoption of the EEHRxF. Furthermore, three online surveys related to the assessment of practice for production and exchange of health information in three specific priority categories (Patient Summary, Laboratory Report and Hospital Discharge Report) are make available and disseminated.

1.2 Scope and objectives

This document intends to:

- Present the XpanDH Bubbles concept and levels.
- Present the list of workshops performed in the context of WP4.
- Present the online surveys results related to the assessment of practice for production and exchange of health information in three specific priority categories (Patient Summary[1], Laboratory Report[2] and Hospital Discharge Report[3]).
- Present the findings, challenges and barriers collected from the discussions.

[1] https://ec.europa.eu/eusurvey/runner/xPanDHPS
[2] https://ec.europa.eu/eusurvey/runner/XpanDHLabRep
[3] https://ec.europa.eu/eusurvey/runner/xPanDHDR

2 XpanDH Bubbles

XpanDH Bubbles are collections of organisations that agreed to experiment with using the EEHRxF, in a set priority category, mostly on their own budget, or using other projects budgets, or pro-bono, but in effective articulation with XpanDH.

Considering the European Commission (EC) priority categories shown in Figure 1 and the analysis conducted at the beginning of the project with the partners, the selected priority categories to focus on WP4 were the laboratory report and hospital discharge report. In addition to these categories, and during the project's progress, the patient summary was also considered as a relevant category for analysis. Note that with the new European Health Data Space (EHDS) resolution, these names have changed to: (a) patient summaries; (b) electronic prescriptions; (c) electronic dispensations; (d) medical imaging studies and related imaging reports; (e) medical test results, including laboratory and other diagnostic results and related reports; and (f) discharge reports.

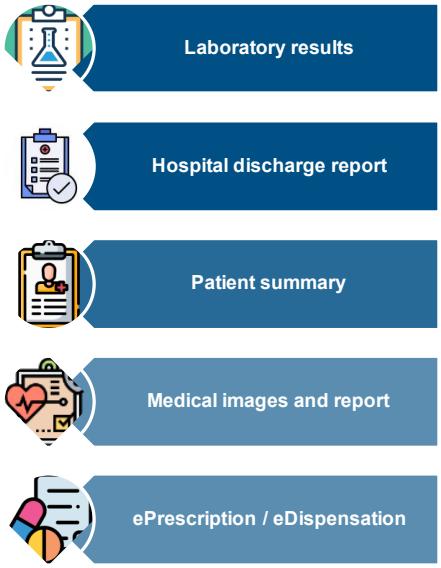

Figure 1 - EC priority categories.

Taking into account the priority categories selected for depth analysis in WP4 and the motivation of the involved partners, the bubbles depicted in Figure 2 were established. Considering the heterogeneity and levels of maturity among the partners comprising the bubbles, as well as the phase at which they joined the project and the work they undertake around the EEHRxF, the bubbles are divided into three main groups:

- X-Bubbles 1-6: X-Bubbles are constituted by groups of organizations, partners within XpanDH consortium, that voluntarily test the use of EEHRxF through the definition of concrete use cases for exchange and adoption scenarios. Their objective is to assess and validate the appropriateness of the EEHRxF, identifying gaps and plan its adoption via feasibility demonstrators. These bubbles were created at the beginning of the project, focusing on two

specific categories: laboratory reports and hospital discharge reports in different data exchange scenarios. These bubbles are accountable for the feasibility demonstrators as they engage in a more in-depth analysis, which includes specifying concrete use cases and adoption scenarios. The specification of these bubbles can be consulted in *D4.1 – (D4.1.1) XpanDH Adoption Domains* and the associated feasibility demonstrators in *D4.3 – (D4.2) XpanDH Feasibility Demonstrators*.

- "In silico" bubbles: These bubbles are constituted by groups of organisations that are either associated partners to XpanDH or collaborate with the project in a more informal way. These bubbles do not delve as deeply as the X-Bubbles, but they are essential for extracting insights, barriers, and opportunities around the EEHRxF. Their objective is to identify requirements to the EEHRxF and its implementation via structured (workshops and surveys) exercises.
- xShare Adoption Sites: These bubbles arise from the collaboration and synergy between the XpanDH and the xShare[4] projects. The main input of these organisations was the response to the online surveys.

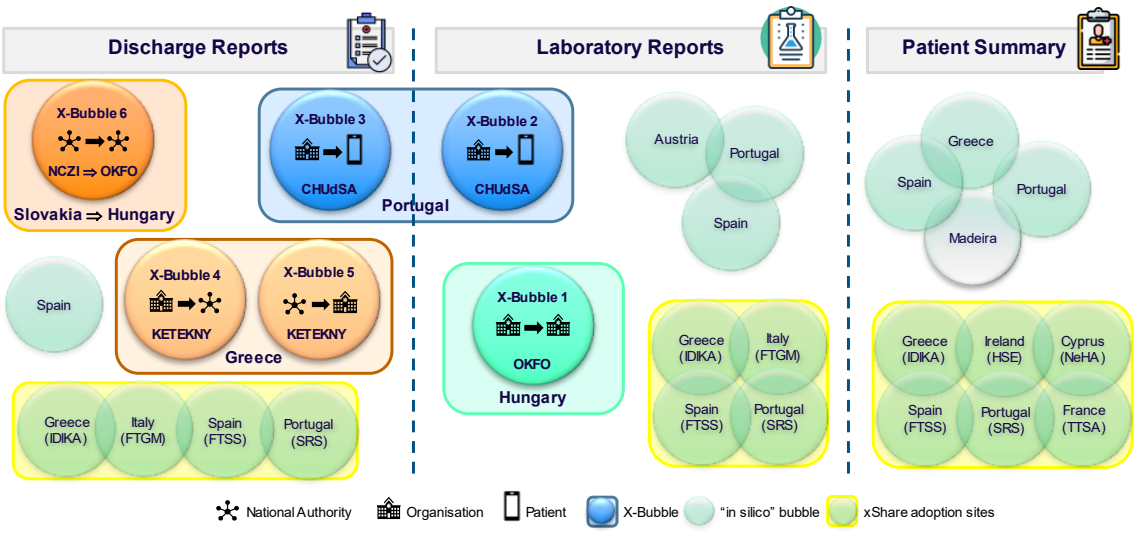

Figure 2 – XpanDH Bubbles.

Based on the interest demonstrated by the organizations and considering the alignment with the project objectives, the following "in silico" bubbles have been defined throughout the project:

- Patient Summary
  - National agencies - SPMS from Portugal and IDIKA from Greece.
  - Regional agencies - SRS from Madeira and SAS from Andalusia supported by NTT DATA Spain.
- Laboratory Report:
  - National agencies – MoH from Spain.
  - Healthcare provider - CHTMAD from Portugal.

[4] xShare project website - https://xshare-project.eu/

    - Academic - UAS Technikum Wien from Austria.
    - Regional agency - SRS from Madeira and SAS from Andalusia supported by NTT DATA Spain.
- Discharge Report:
    - Spain – Regional agency - SRS from Madeira and SAS from Andalusia supported by NTT DATA Spain.

3 Adoption Opportunities Workshops

In the context of task 4.1, several workshops were conducted with both internal and external stakeholders (Figure 3), with the aim of not only sharing the work carried out in the adoption of the EEHRxF, but also identifying and raising awareness of challenges and barriers that may compromise its adoption. This exchange of information and discussions with potential adopters, as described in the set of workshops presented in this section, provided a perspective beyond the X-Bubbles on the challenges faced by organizations, as well as the ongoing work for the adoption of the EEHRxF. In addition to these workshops, several one-by-one meetings were held with partners to further detail information.

Figure 3 - XpanDH WP4 Workshops.

In order not to replicate information, most of the workshops will be presented in the following subsections apart from three that will be reported in deliverable *D1.8 - (D1.6) – Report on Policy Dialogue activities and achievements*: National experimentation workshop, EEHRxF expert summit and DigiHealthDay workshop. The results of all these discussions are presented in an aggregated way in section 5.

3.1 X-Bubbles workshops on laboratory report and hospital discharge report

Table 1 - X-Bubbles Workshops.

Date	26-27 June 2023
Organisations	UNINOVA, HL7, IHE-EUR, KETEKNY, NCZI, CHUdSA, OKFO, ISCTE, DIGITALEUROPE, EHMA, CEN/TH
Goals	• Understand the state of current guidance and what specific aspects need to be refined to make it useful. • Identify which information is required from the bubbles to refine guidance. • Understand the state-of-practice, the motivations and the objectives of the organisations within the bubbles. • Align the requirements of each organisation within each adoption domain in order to agree on a common format.

The two workshops held with X-Bubbles included WP2 (specifications) and WP3 (organizational readiness) in order to align work between WPs and understand the needs of X-bubbles. In this context, WP2 presented the specifications and technical assets building blocks including the objectives, background (X-eHealth project) and the XpanDH FHIR IGs[5]. WP3 presented the organisational readiness and bubbles engagement including goals, context and the readiness model based on the Refined eHealth European Interoperability Framework. Finally, all X-Bubbles presented their motivation, objectives, current situation and main challenges.

For the discussion, WP2 presented the following questions to X-Bubbles:

- Laboratory Report
  - Which types of tests do you need to represent?
  - Structure of your report (single section, more sections)
  - How many reports are you creating for each request?
  - How do you suppose to search/get those reports?
  - Which code systems/value sets are you using? In case are you mapping your internal codes to international code systems?
  - Do you have examples (HL7 FHIR or not) that we can use to develop and validate the specifications?

[5] https://build.fhir.org/ig/hl7-eu/xpandh/

- Hospital Discharge Report:
  - What are the sections and the data we should focus on at this stage?
  - Which code systems/value sets are you using? In case are you mapping your internal codes to international code systems?
  - Do you have examples (HL7 FHIR or not) that we can use to develop and validate the specifications?
  - How do you suppose to search/get those reports?

Also, WP3 presented the following questions to bubbles:

- What is your level of understanding of the EEHRxF?
- Who around your organization knows about it?
- What type of material would you need to be better aware?
- Who, in your organization, needs to be engaged in the process?

From the brainstorming on requirements for X-Bubbles on **laboratory report** we achieved a first list of laboratory results considered important to diabetic patients that needs further validation. Furthermore, to help answer WP2 questions, it was agreed to share laboratory reports anonymized by X-Bubbles (structured and unstructured) in order to verify the structure and understand if each laboratory order correspond to a laboratory result or if some aggregation of results exist in the final laboratory report. Finally, there was some discussion about making laboratory reports available to patients. Different views were presented considering that in specific cases this provision should not be made without prior consultation with the physician (for example cancer patients).

From the brainstorming on requirements for X-Bubbles on **hospital discharge reports** WP2 also asked for anonymized examples to understand the main sections and datasets that are important for the X-Bubbles. Furthermore, the integration of all information into a single hospital discharge report document was discussed. In several cases the discharge summary it is composed not only of the discharge report of the clinicians but also of the discharge report of the nurses and administrative information.

As the main decisions of these workshops, it was decided to start working on the EEHRxF content using the datasets from the eHN guidelines and highlighting the importance of each data field for each X-Bubble. Additionally, meetings were scheduled with WP2 and WP3 to answer the questions pointed out and share the requested examples.

3.2 Exploratory workshop with associated partners

Table 2 - Exploratory Workshop.

Date	7 December 2023
Organisations	ISCTE, UNINOVA, MoH Spain, CHTMAD, NTT Data, CEN/TH, Hope, I~HD, IHE-EUR, DIT, NCZI, EHMA, Gnomon
Goals	• Understand if and how organisations are following up on EEHRxF recommendations. • How is EEHRxF adoption being conducted and what are the future plans. • Analyse the situation and the connection to the XpanDH existing bubbles, their extension or creation of additional bubbles.

In this workshop, associated partners who join the project in its course, showing interest in adopting EEHRxF, were invited to participate. In the first part of the workshop, the developments of X-Bubbles were presented, including the feasibility demonstrators, their strategy for adopting EEHRxF, and the first challenges and barriers identified.

The Ministry of Health (MoH) from Spain representative partner shared that they are in collaboration with HL7 Europe and are developing an Implementation Guide (IG) for laboratory reporting using the FHIR DiagnosticReport resource, which is a work in progress that they hope to align with the final EEHRxF specifications. Furthermore, in Spain there are several autonomous regions where alignment and interoperability between them is very important. NTT Data Spain, as a company, is also interested in collaborating with the project, and the same interest must exist on the part of its customers for it to become a reality.

From Centro Hospitalar de Trás-os-Montes e Alto Douro (CHTMAD) there is interest in also collaborating with the project, specifically in interoperability within the hospital itself between the different systems, but also with other organizations. CHTMAD maintains a collaboration with University of Applied Sciences (UAS) Technikum Wien, which it also intends to incorporate.

These discussions, and others that followed, resulted in the creation of "in silico" bubbles presented in section 2 that aim to collect the adoption status in these organizations and the challenges they face in the process.

It was agreed to schedule dedicated follow-up workshops in each priority category to continue the discussion.

3.3 X-Bubbles alignment workshop on laboratory report

Table 3 – X-Bubbles 1-2 alignment workshop.

Date	17 April 2024
Organisations	ISCTE, UNINOVA, CHUdSA, OKFO, EMPIRICA, UiO, Gnomon, CEN/TR, HL7, NTT Data, IHE-EUR, EHMA, SU, ARIA
Goals	• Share the X-Bubbles 1 and 2 developments on Laboratory report. • Discussion and alignment of required data fields. • Identification of challenges and barriers.

This workshop was dedicated to X-Bubbles 1 and 2 who developed their work in the laboratory report for diabetic patients. In the first part of the workshop, the last developments of X-Bubbles 1 and 2 were presented, including the feasibility demonstrators, work performed and challenges and barriers identified.

The discussion began with an attempt to define the final list of parameters necessary for the follow-up of patients with diabetes that is in accordance with both X-Bubbles. Many of the parameters are similar in both bubbles, but more discussion with physicians is needed to check the gaps and have a final list.

To have a good alignment between the X-Bubbles, an exercise was carried out based on the eHN guidelines, checking and discussing all data fields and their importance for each X-Bubble. Meetings were scheduled to complete this analysis and add information from the data availability in the X-Bubbles systems.

Finally, there was some discussion about the importance of original clinical documents and in which cases they are necessary and/or preferred.

3.4 "in silico" bubbles workshop on laboratory report

Table 4 - Laboratory report "in silico" bubbles workshop.

Date	7 May 2024
Organisations	ISCTE, UNINOVA, EHMA, UAS Technikum Wien, HL7, IHE-EUR, NTT Data, NCZI, Gnomon, SU, EMPIRICA
Goals	• Understand how "in silico" bubbles are adapting the EEHRxF recommendations for laboratory report. • Identification of needs, challenges and barriers.

This workshop was dedicated to laboratory report "in silico" bubbles with the vision of a company and a university.

NTT Data is a company whose clients in Spain that can be engaged in the project are the Canary Islands, Andalucia and Valencia regions. The first option was to work on the laboratory reports but taking into account the associated timeline it was decided

to change to the patient summary and check with the clients the possibility of engaging in the project. In Spain, the patient summary is currently structured in HL7 Clinical Document Architecture (CDA) and presents differences between the different regions, providing an opportunity to try to harmonize this content in FHIR structure.

Regarding UAS Technikum Wien, the current situation in Austria was shared as it is part of the process of forming the Electronic Health Record Austria (ELGA) system. In relation to laboratory reports, these are exchanged in the CDA format defined 10 years ago in a series of workshops with all key stakeholders to define the structure and coding. Currently, they have successfully tested the transformation of these CDA documents to FHIR according to the European FHIR IG for laboratory report.

At the end of the workshop, there was a discussion about original clinical documents where the need for their existence was discussed, the number of metadata they can contain, and their role in the new regulations.

3.5 "in silico" bubbles workshop on patient summary

Table 5 - Patient summary "in silico" bubbles workshop.

Date	22 May 2024
Organisations	ISCTE, UNINOVA, EHMA, EMPIRICA, SRS, Gnomon, IDIKA, IHE-EUR, CEN/TH, ARIA
Goals	• Understand how "in silico" bubbles are adapting the EEHRxF recommendations for patient summary. • Identification of needs, challenges and barriers.

This workshop was dedicated to patient summary "in silico" bubbles with the vision of national and regional authorities. In the first part of the workshop, Secretaria Regional de Saúde da Região Autónoma da Madeira (SRS) and Greek e-Government Center for Social Security Services (IDIKA) presented their vision for adopting the EEHRxF and the work in progress.

In the case of SRS, the region has its own centralized system that interconnects the entire public health sector. The region intends to be aligned with EHDS regulation, with EEHRxF being the possibility of interconnecting the public sector with the private sector and the rest of Europe. They have already worked on past projects where they mapped part of the patient summary information to FHIR, already having some experience using the standard.

On the IDIKA side, a new EHR system is being implemented that aims to be aligned with EEHRxF. In Greece, IDIKA is responsible for the cross-border exchange, including the patient summary in CDA. The objective is to implement the EEHRxF at a national level with the new system and expand the cross-border exchange to the other priority categories.

Regarding the use and need for original clinical documents, IDIKA uses it within the country as it does not require translation and allows some coding problems between different systems to be overcome. In the case of SRS, it is used to provide data to patients.

At the end of the workshop there was a discussion about the harmonization of the patient summary, namely how many patient summaries exist at national level (public, private, regional, etc.), what are the harmonization strategies and who is responsible for updating them.

3.6 X-Bubbles alignment workshop on hospital discharge report

Table 6 - X-Bubbles 3-6 alignment workshop.

Date	12 June 2024
Organisations	ISCTE, UNINOVA, OKFO, ARIA, EMPIRICA, UiO, Gnomon, HL7, CHUdSA
Goals	• Share the X-Bubbles 3-6 developments on hospital discharge report. • Discussion and alignment of required data fields. • Identification of challenges and barriers.

This workshop was dedicated to X-Bubbles 3, 4, 5 and 6 who developed their work in the hospital discharge report. In the first part of the workshop, the last developments of X-Bubbles were presented, including the feasibility demonstrators, work performed and challenges and barriers identified.

To understand the level of alignment between the X-Bubbles, an exercise was carried out based on the eHN guidelines, checking and discussing all data fields and their importance for each X-Bubble. Meetings were scheduled to complete this analysis and add information from the data availability in the X-Bubbles systems.

Finally, the importance of original clinical documents was discussed and in which cases they are necessary and/or preferred, as well as understanding whether all data groups are necessary in all specialties.

3.7 Madeira Digital Transformation Week workshop

Table 7 - MDTWeek workshop.

Date	27 June 2024
Organisations	ISCTE, UNINOVA, EMPIRICA, IHE-EUR, Gnomon, OKFO, CHUdSA, NCZI, MedCom, HSE, SRS, TTSA, external audience.
Goals	• Explore the significance of EEHRxF as an essential conduit for health data exchange across Europe. • Share the XpanDH developments (bubbles)

	• Share the xShare developments (adoption sites) • Open exercise: collection of requirements, challenges and barriers.

This workshop took place at Madeira Digital Transformation Week with the title: Towards individual's empowerment over own health data: The role of the European Electronic Health Record Exchange Format. The workshop was open to the public and involved partners from the XpanDH and xShare projects. xShare is a Research and Innovation action envisioning that everyone can share their health data in European EHRxF with a click-of-a-button.

On the XpanDH side, a contextualization was made in light of the EHDS, including the ecosystem created, the work carried out in the bubbles around the EEHRxF and the way it assesses maturity and evolve. On the xShare side, the concept of the "xShare Yellow button" and the Adoption sites that will implement it were presented. This joint workshop established synergies between the projects, with XpanDH being more focused on content and semantics, and xShare on the exchange technical infrastructure.

It was possible to understand the strategies and levels of adoption of the format in several organizations present. In the end, the audience was invited to engage in an open exercise together to identify some requirements and challenges in adopting the EEHRxF.

3.8 EEHRxF and Blockchain workshop

Table 8 – Blockchain workshop.

Date	16-17 September 2024
Organisations	ISCTE, UNINOVA
Goals	• Think on ways to integrate the EEHRxF with new technologies. • Discuss the value of blockchain in the EHDS.

This workshop took place in ISCTE facilities where the EHDS main points and the work carried out in the XpanDH bubbles around the EEHRxF were presented. The priority categories were discussed, understanding the relevant information in each one and the context of use.

The value of using blockchain techniques was discussed in particular on points such as data provenance, data auditing and the construction of documents with data from different locations.

4 Online surveys

In order to collect more information and have a broader view regarding the possible adoption of the EEHRxF, three online surveys related to the assessment of practice for production and exchange of health information in three specific priority categories are make available and disseminated:

- Laboratory Report[6]
- Patient Summary[7]
- Hospital Discharge Report[8]

These surveys are available on the EU Survey platform and aim to verify the data currently available in the systems compared to that requested in the available guidelines. Furthermore, the coding systems used, and the exchange context considered are also checked.

4.1 Laboratory report

The laboratory report survey has been available online since April 2024 at link https://ec.europa.eu/eusurvey/runner/XpanDHLabRep. Until the submission of this deliverable, 10 responses to this survey were collected, with another 24 having been started but not submitted/finished. Of the 10 responses submitted, 3 refer to healthcare providers, 1 to IT vendors, 1 to EHR vendors, 4 to national/regional authorities and 1 to academic institutions. Regarding the countries involved, there are responses from Netherlands (2), France, Cyprus, Italy (2), Portugal, Hungary, Ireland and Denmark. All aggregated responses to this survey can be consulted in annex I.

[6] https://ec.europa.eu/eusurvey/runner/XpanDHLabRep
[7] https://ec.europa.eu/eusurvey/runner/xPanDHPS
[8] https://ec.europa.eu/eusurvey/runner/xPanDHDR

4.1.1 Original Clinical Document

Regarding the necessity to exchange original clinical documents in the case of laboratory reports, 4 responds that it is not necessary and 6 considered that their use is sufficient without the need for structured data in some contexts. Figure 4 shows the national and international exchange scenarios where original clinical documents are considered, presenting a greater expression at national level.

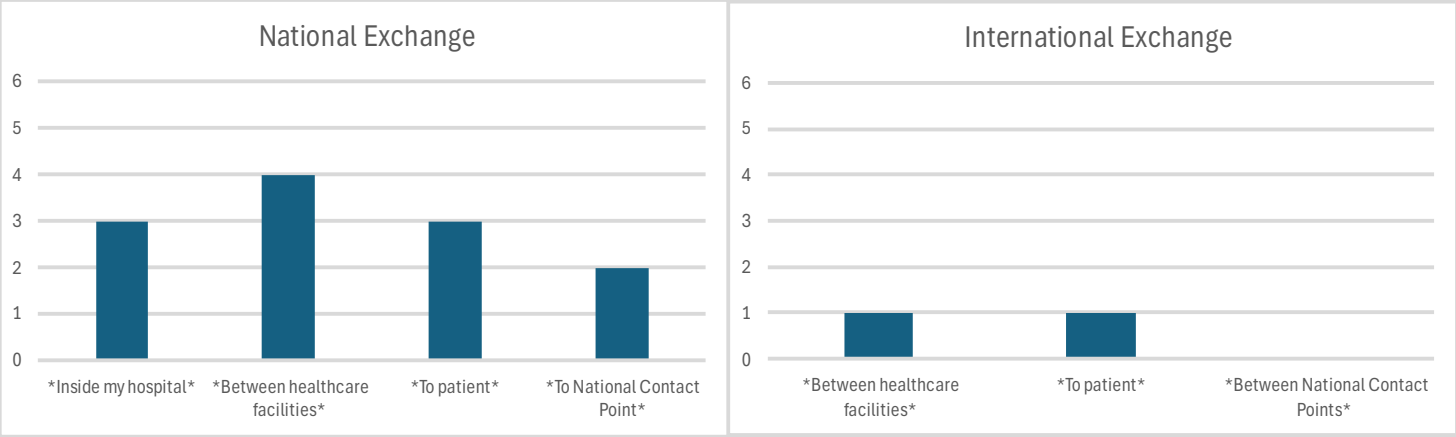

Figure 4 - Original Clinical Document exchange context - laboratory report.

4.1.2 Data importance

The data importance of each data group of information for laboratory report is shown in Figure 5. The majority of groups are considered important and very important, with only the health insurance and payment information groups considered for the majority as not important. Finally, for the legal authenticator and laboratory report metadata groups, the responses are distributed homogeneously.

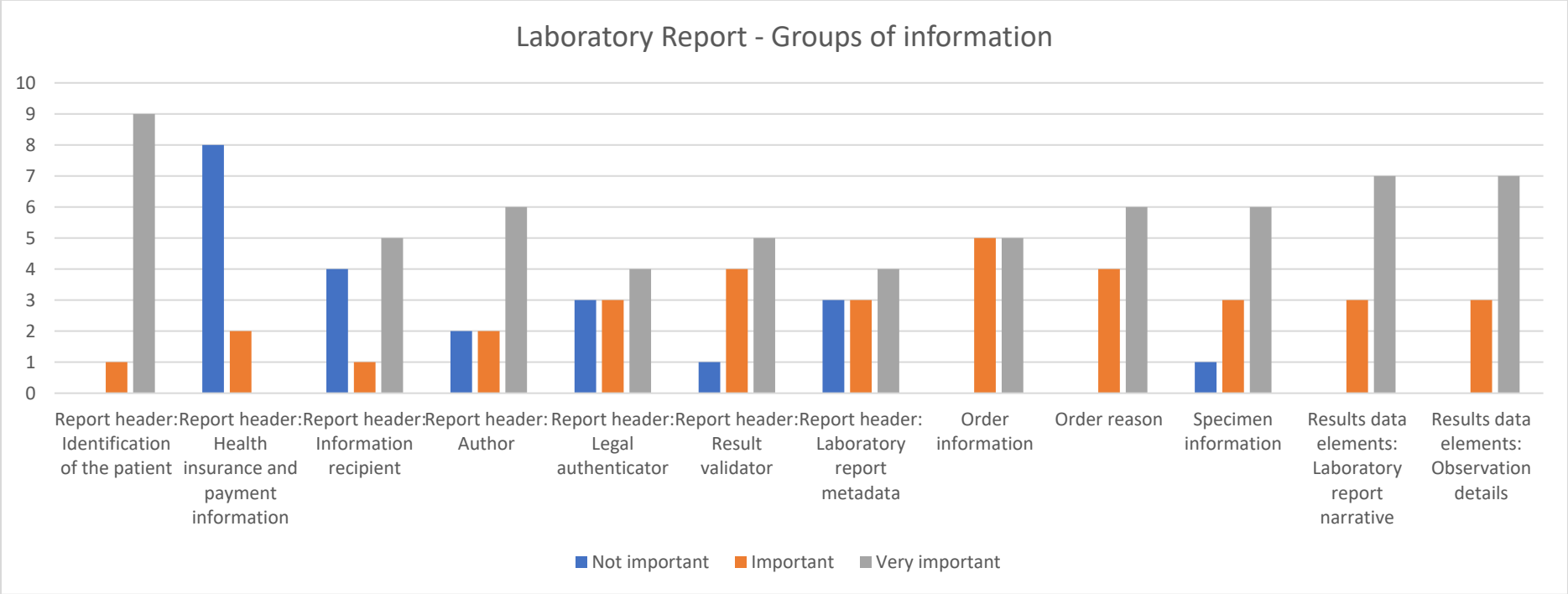

Figure 5 - Data importance by group - laboratory report.

4.1.3 Data availability

For those that considered data groups important or very important, the data availability of that information is shown in Figure 6. It can be observed that much of the information is available in an unstructured form, with the identification of the patient, information recipient and specimen information groups being those with the highest percentage of structured data. In relation to the groups that present a higher percentage of data unavailability, these are the laboratory report metadata and observation results. Regarding report metadata, this high percentage is mainly due to the unavailability of the data fields study type, report custodian and language. In the case of observation

results the data fields with highest number of unavailability are observation original name, observation method, observation device and accreditation status.

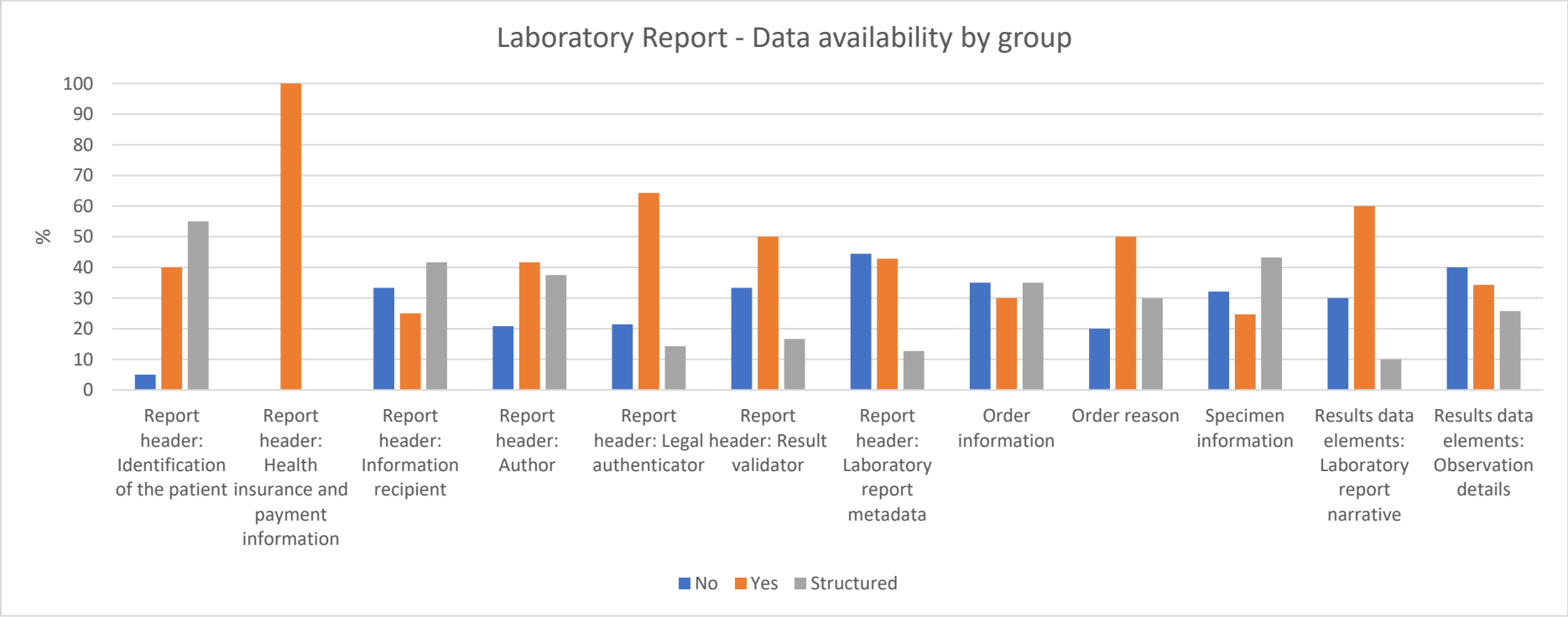

Figure 6 – Data availability by group – laboratory report.

Regarding the coding systems used in the organisations, 45% are local/regional/national codes and 55% are aligned with the international ones. To see the full list of code systems consult the annex I. For those that considered unstructured data, the intention to structure that information is shown in Figure 7.

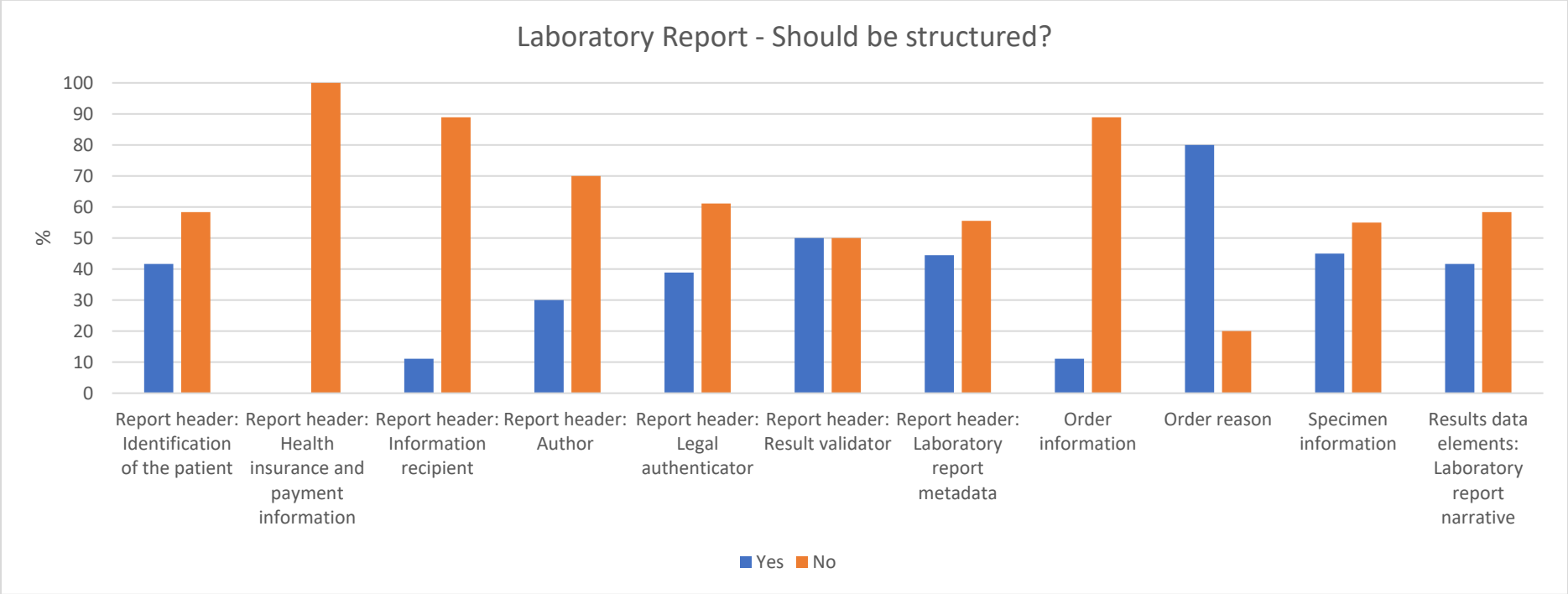

Figure 7 - Data should be structured? - laboratory report.

4.1.4 Exchange context

For those that considered data groups important or very important, the national and international exchange contexts are also addressed. Regarding the national exchange of information (Figure 8), the responses are similar between the different types of exchange with the delivery of information to the patient with less data fields in some groups. In international exchange (Figure 9) the behaviour is similar.

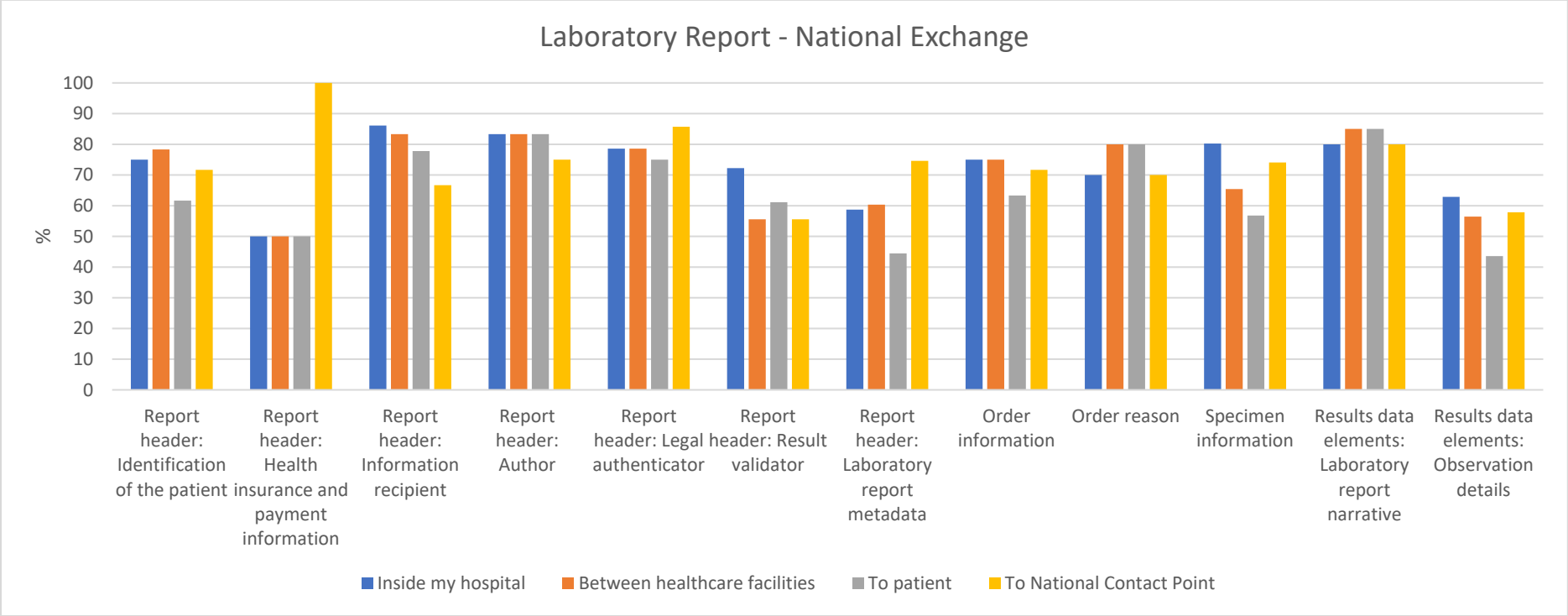

Figure 8 – National exchange context – laboratory report.

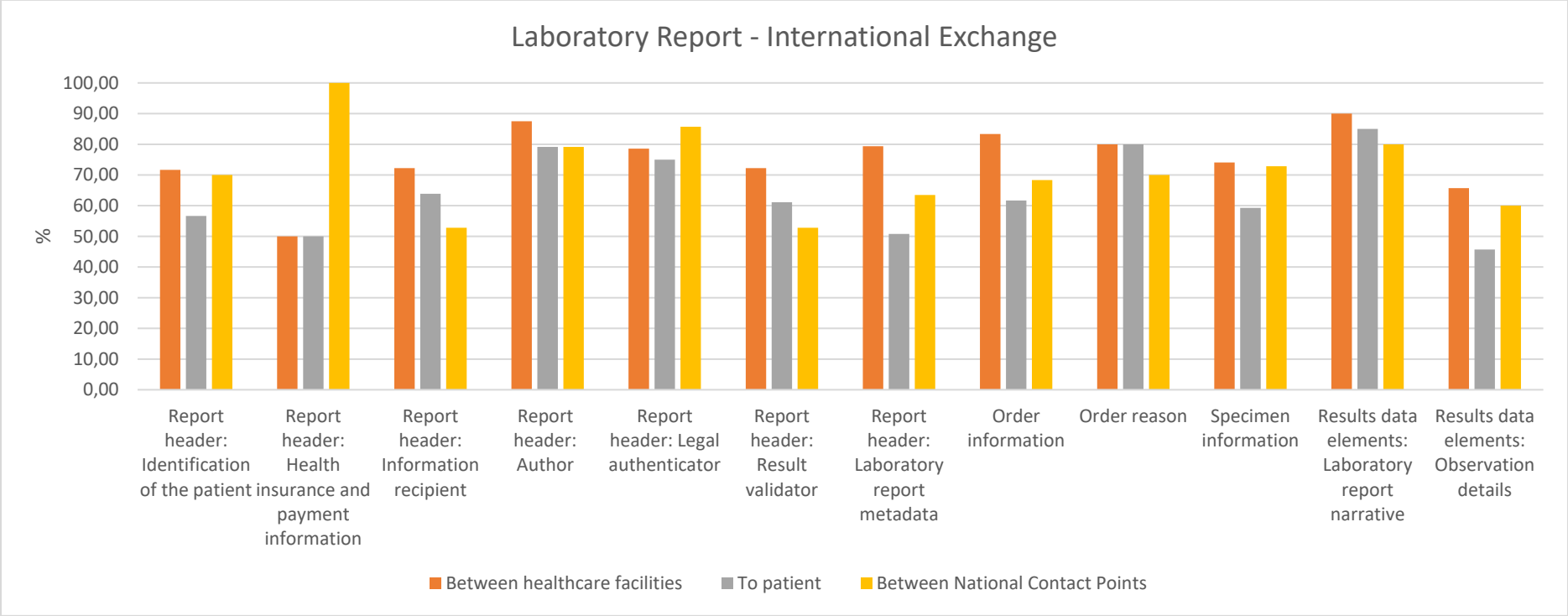

Figure 9 – International exchange context – laboratory report.

4.2 Patient summary

The patient summary survey has been available online since May 2024 at link https://ec.europa.eu/eusurvey/runner/xPanDHPS. Until the submission of this deliverable, 6 responses to this survey were collected, with another 19 having been started but not submitted/finished. Of the 6 responses submitted, 2 refer to healthcare providers, 1 to IT vendors, 1 to EHR vendors and 2 to national/regional authorities. Regarding the countries involved, there are responses from France, USA, Cyprus (2), Portugal, and Denmark. All aggregated responses to this survey can be consulted in annex II.

4.2.1 Original Clinical Document

Regarding the necessity to exchange original clinical documents in the case of patient summary, 4 responds that it is not necessary and 2 considered that their use is sufficient without the need for structured data in some contexts. Figure 10 shows the national and international exchange scenarios where original clinical documents are considered, presenting the same expression at all levels.

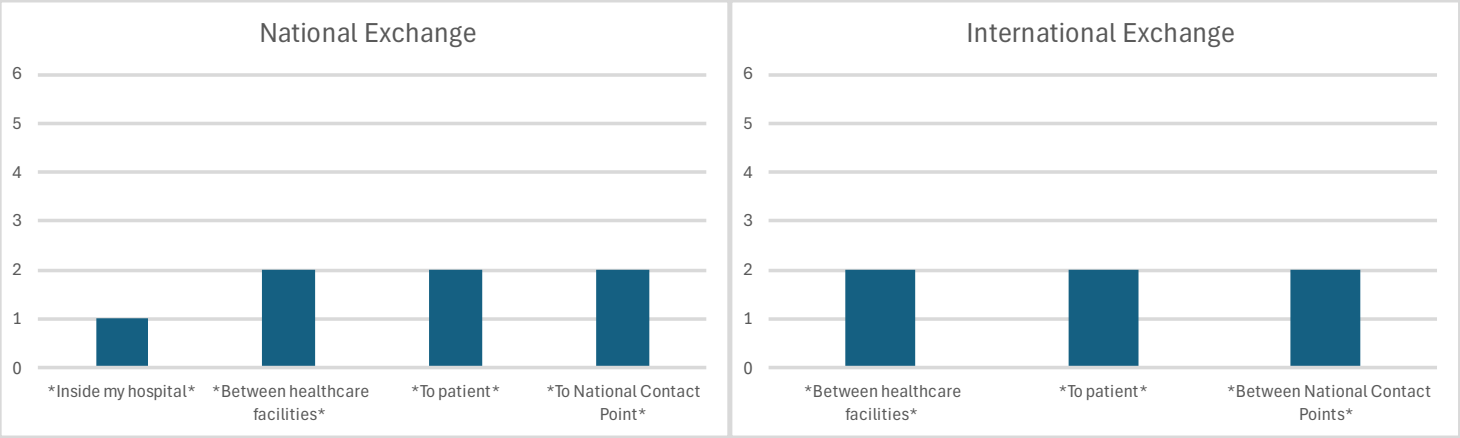

Figure 10 - Original Clinical Document exchange context – patient summary.

4.2.2 Data importance

The data importance of each data group of information for patient summary is shown in Figure 11. The majority of groups are considered very important or important, with only the additional information and advance directive groups considered for the majority as not important.

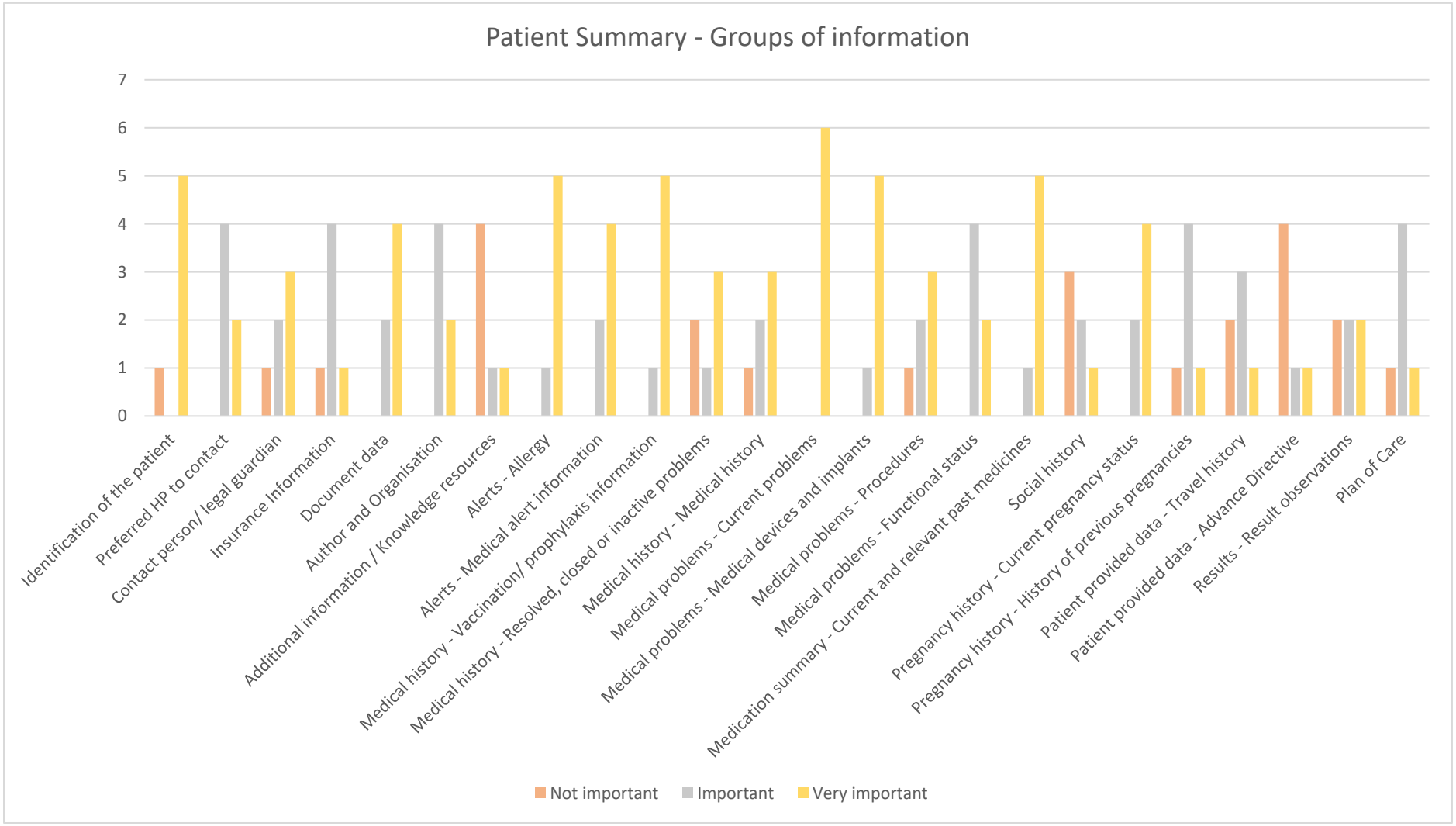

Figure 11 – Data importance by group – patient summary.

4.2.3 Data availability

For those that considered data groups important or very important, the data availability of that information is shown in Figure 12. It can be observed that most of the information is not available or available in a structured format with the unstructured data having little expression. Regarding the unavailable information, the main groups are insurance information, author and organization, additional information, medical devise and implants, history of previous pregnancies and functional status. Unstructured data have relevance only on medial history, travel history and advance directive data groups, being on the same percentage of structured data. Finally, structured information is more present in data groups identification of the patient, preferred HP, contact person, document data, social history and results observations.

Regarding the coding systems used in the organisations, 32% are local/regional/national codes and 68% are aligned with the international ones. To see the full list of code systems consult the annex II. For those that considered unstructured data, the intention to structure that information is shown in Figure 13.

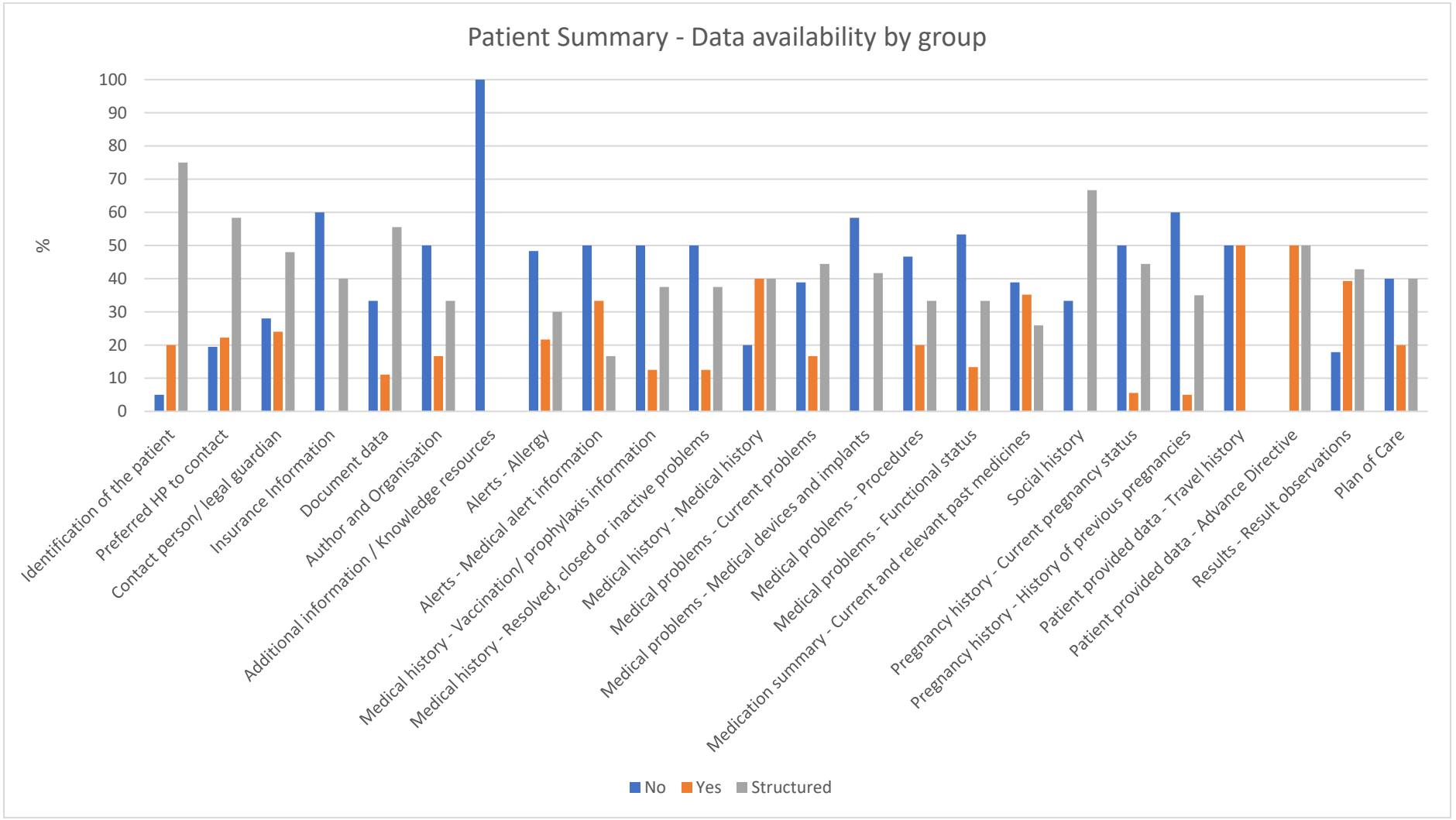

Figure 12 – Data availability by group – patient summary.

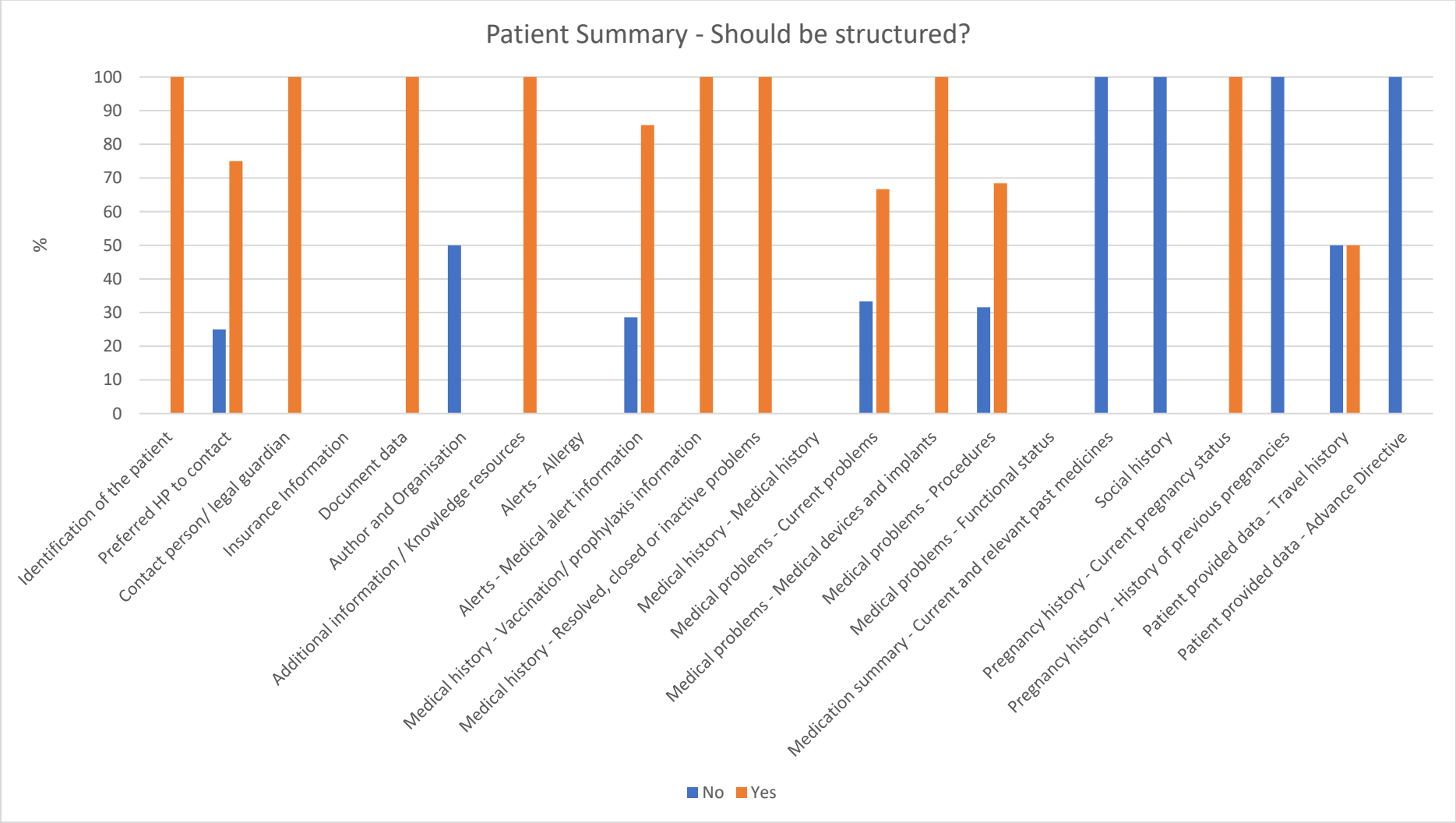

Figure 13 - Data should be structured? - patient summary.

4.2.4 Exchange context

For those that considered data groups important or very important, the national and international exchange contexts are also addressed. Regarding the national exchange of information (Figure 14), the responses are similar between the different types of exchange with medical alert information, social history, pregnancy history, patient provided data and care plan data groups with lower expression than the others. In international exchange (Figure 15) the exchange of information with the patient is not as significant in data groups insurance information, author and organization and medical history. Regarding the exchange between national contact points the data groups with less significance are the resolved problem, functional status and social history.

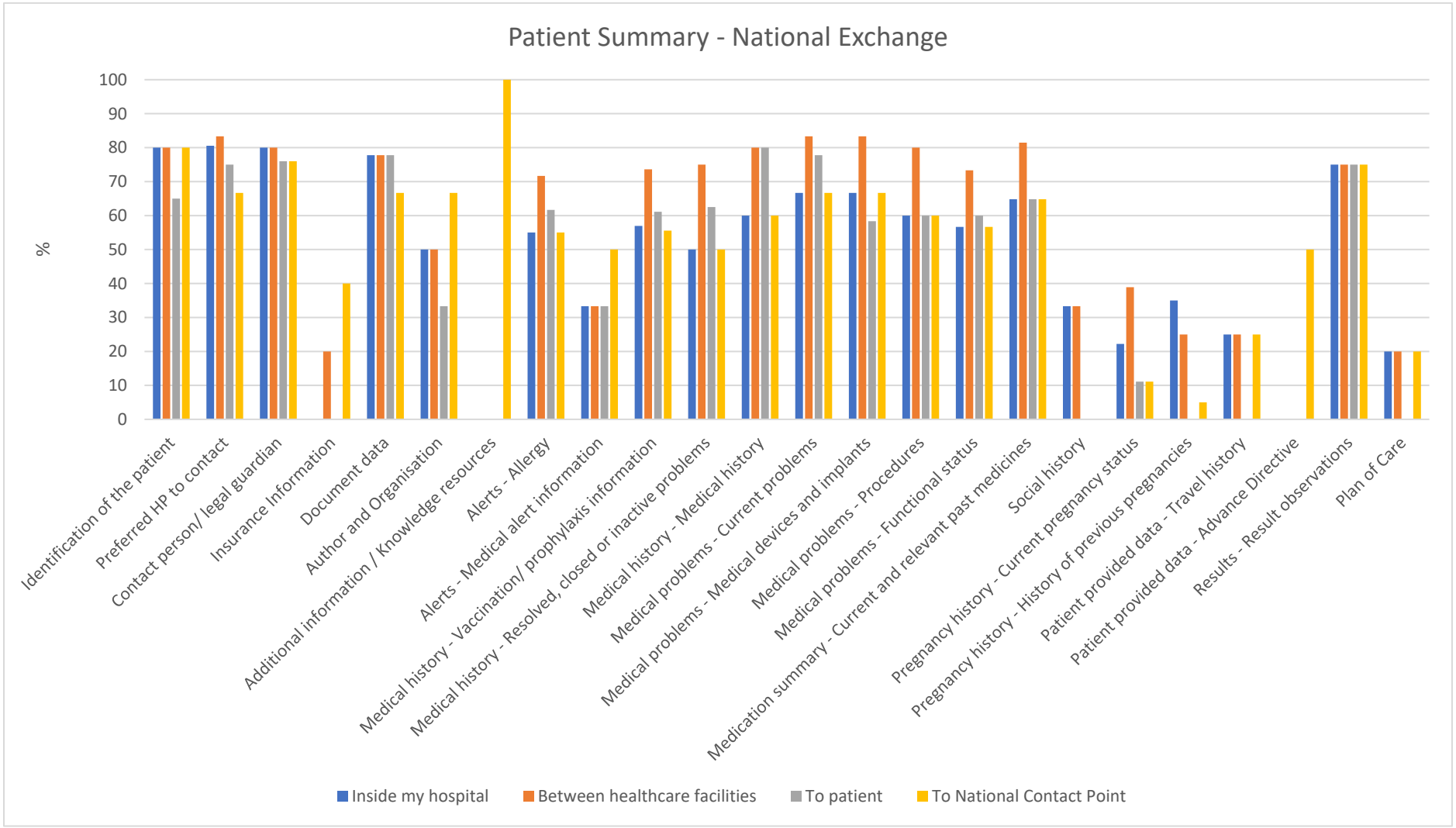

Figure 14 – National exchange context – patient summary.

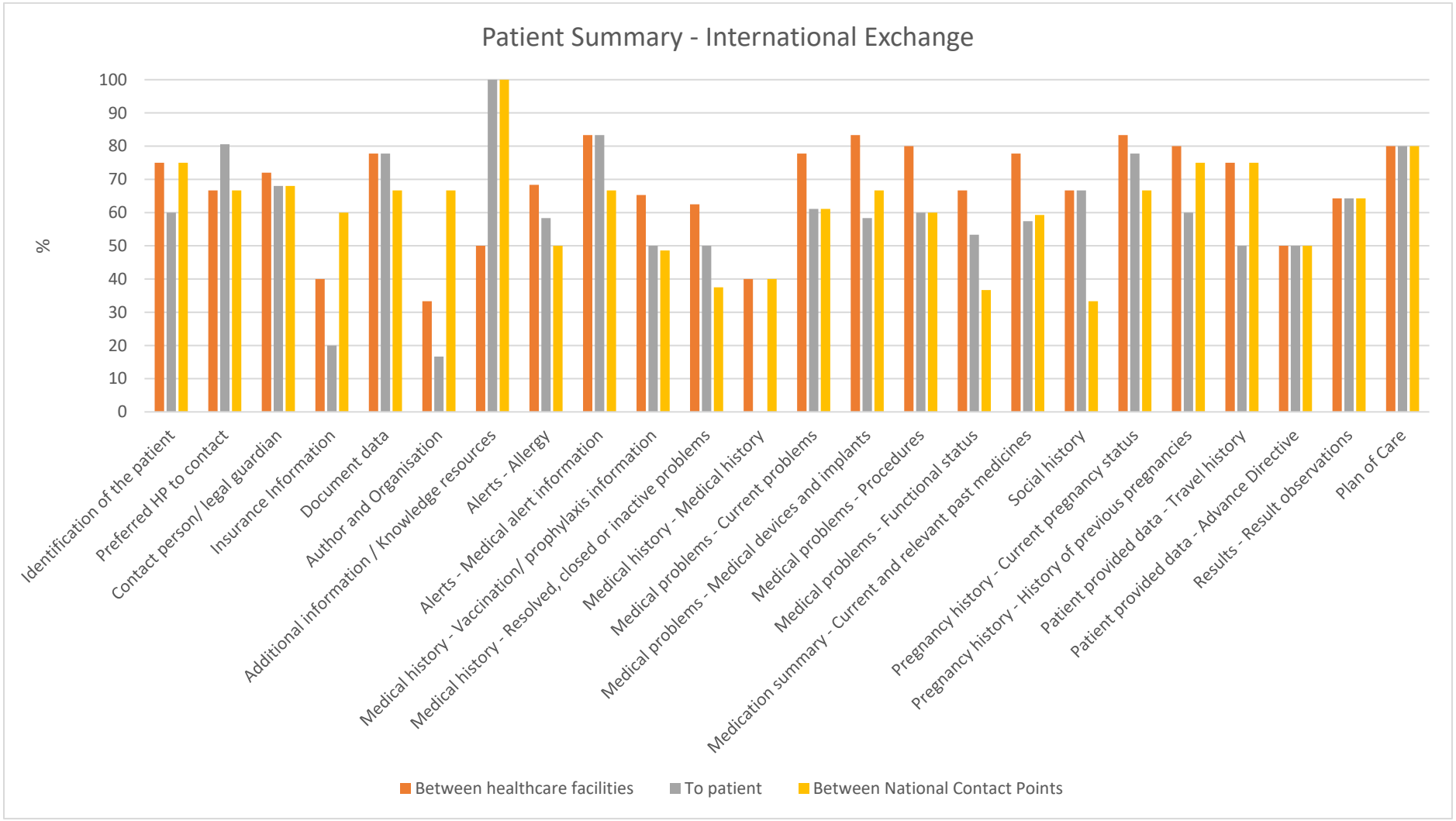

Figure 15 – International exchange context – patient summary.

4.3 Hospital discharge report

The hospital discharge report survey has been available online since July 2024 at link https://ec.europa.eu/eusurvey/runner/xPanDHDR. Until the submission of this deliverable, 5 responses to this survey were collected, with another 2 having been started but not submitted/finished. Of the 5 responses submitted, 2 refer to healthcare providers, 1 to IT vendors, and 2 to national/regional authorities. Regarding the countries involved, there are responses from France, Cyprus, Italy, Portugal and Denmark. All aggregated responses to this survey can be consulted in annex III.

4.3.1 Original Clinical Document

Regarding the necessity to exchange original clinical documents in the case of hospital discharge report, 4 responds that it is not necessary and 1 considered that their use is sufficient without the need for structured data in some contexts. Figure 16 shows the national and international exchange scenarios where original clinical documents are considered, with only one organisation using in international exchange.

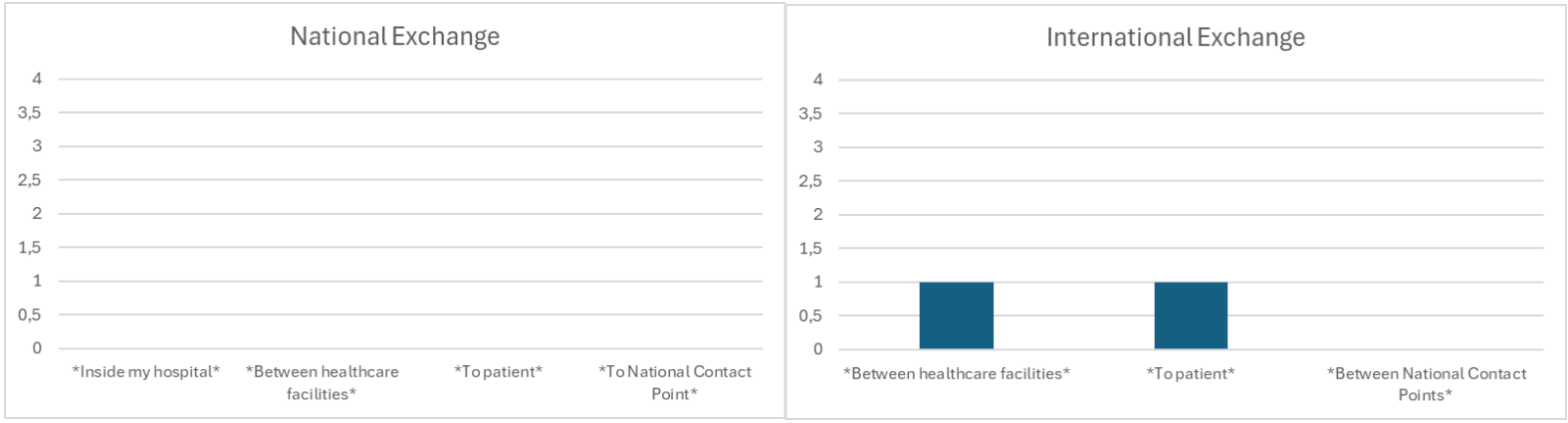

Figure 16 - Original Clinical Document exchange context – Hospital discharge report.

4.3.2 Data importance

The data importance of each data group of information for hospital discharge report is shown in Figure 17. In this case three groups are marked as not in most answers, the health insurance and payment information, information recipient and functional status. On the other hand, another 7 data groups are marked by the majority as very important: identification of the patient, allergy and intolerance, medical alerts, diagnostic summary, objective findings, functional status and medication summary.

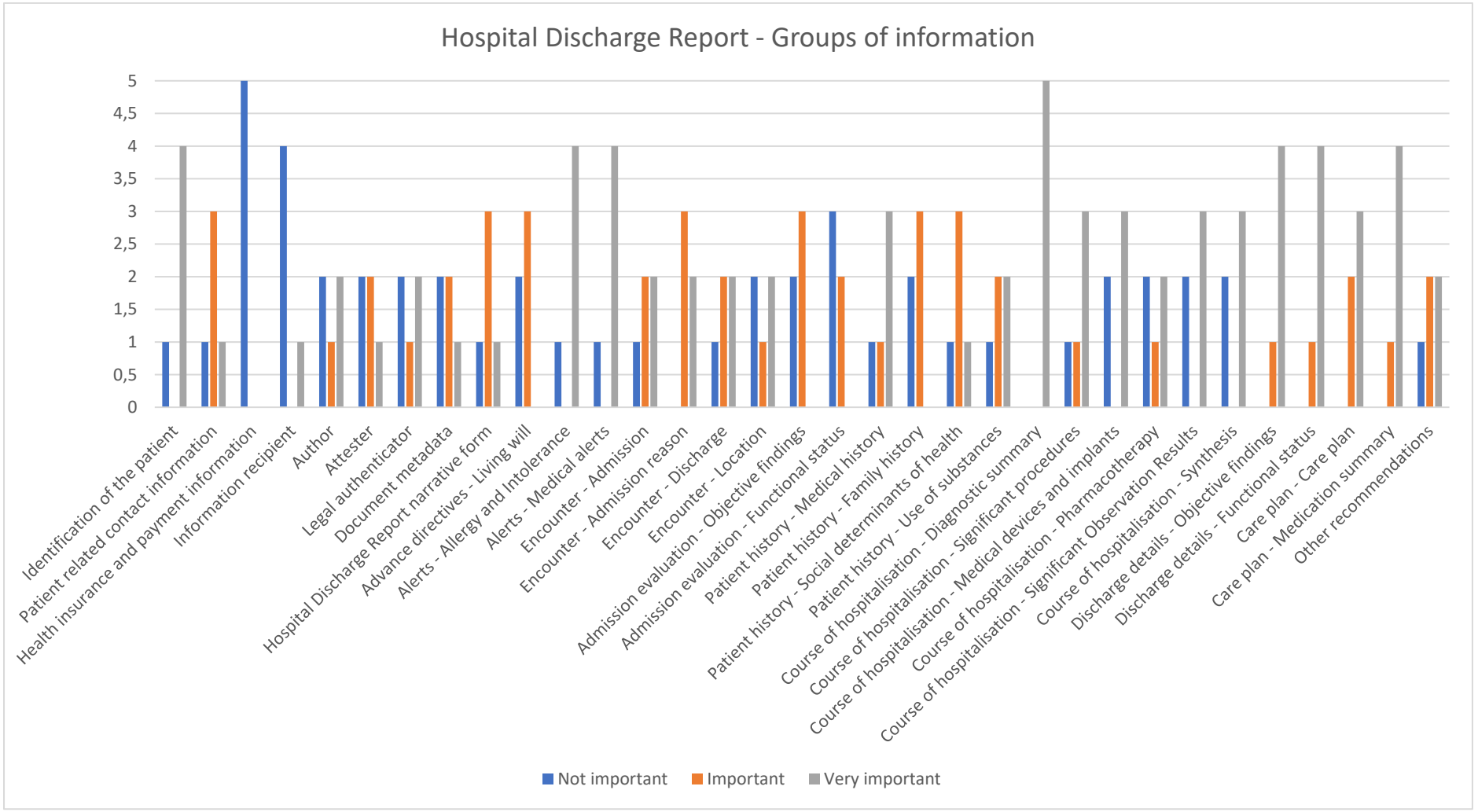

Figure 17 - Data importance by group - hospital discharge report.

4.3.3 Data availability

For those that considered data groups important or very important, the data availability of that information is shown in Figure 18. It can be observed that almost half of the data groups have more than 50% of not available information with more expression on attester, hospital discharge report in narrative form, social determinants for health, use of substances, significant observation results and functional status. Regarding structured information, the main groups are identification of the patient, author, discharge and pharmacotherapy.

Regarding the coding systems used in the organisations for core fields, 55% are local/regional/national codes and 45% are aligned with the international ones. To see the full list of code systems consult the annex III. For those that considered unstructured data, the intention to structure that information is shown in Figure 19.

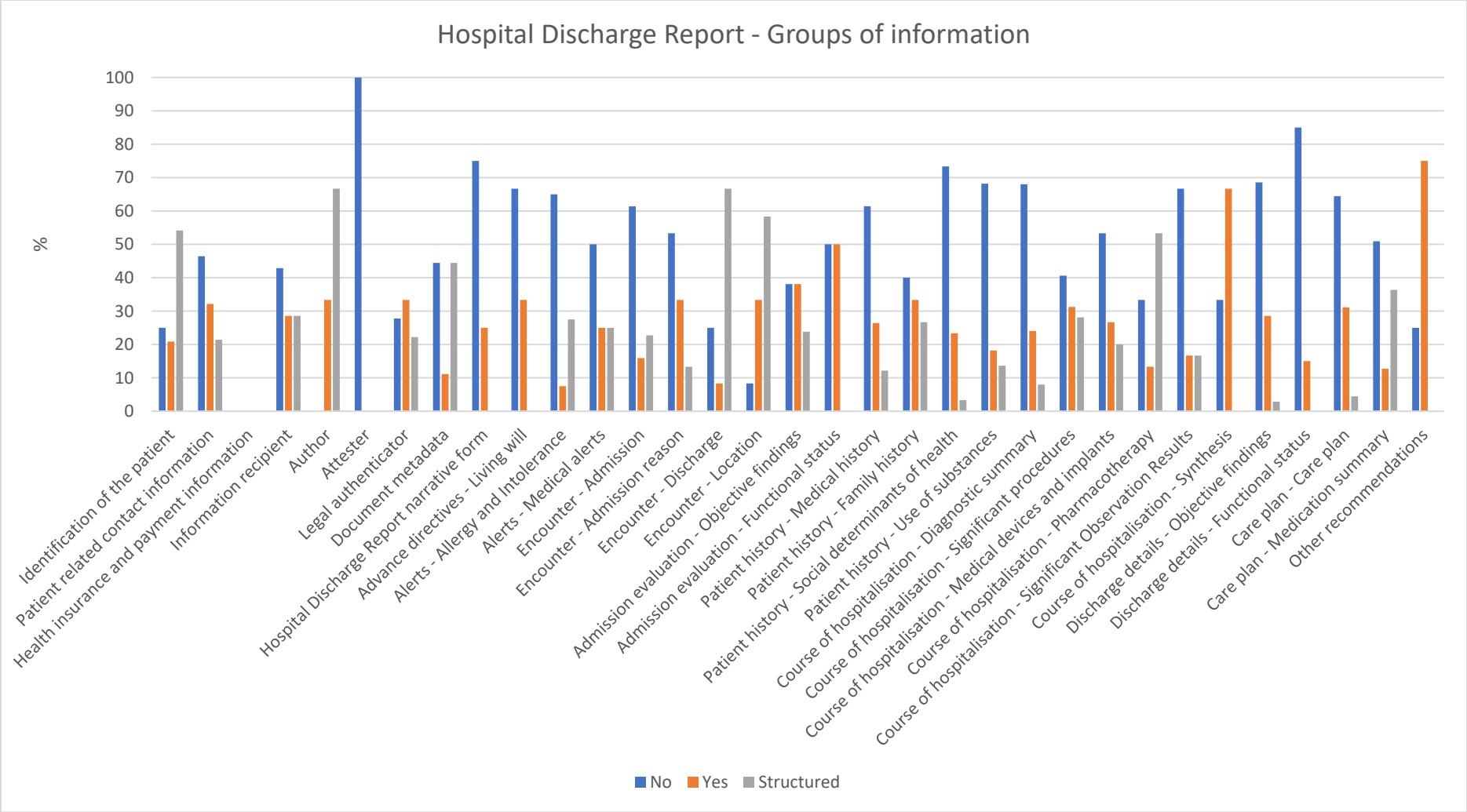

Figure 18 - Data availability by group - hospital discharge report.

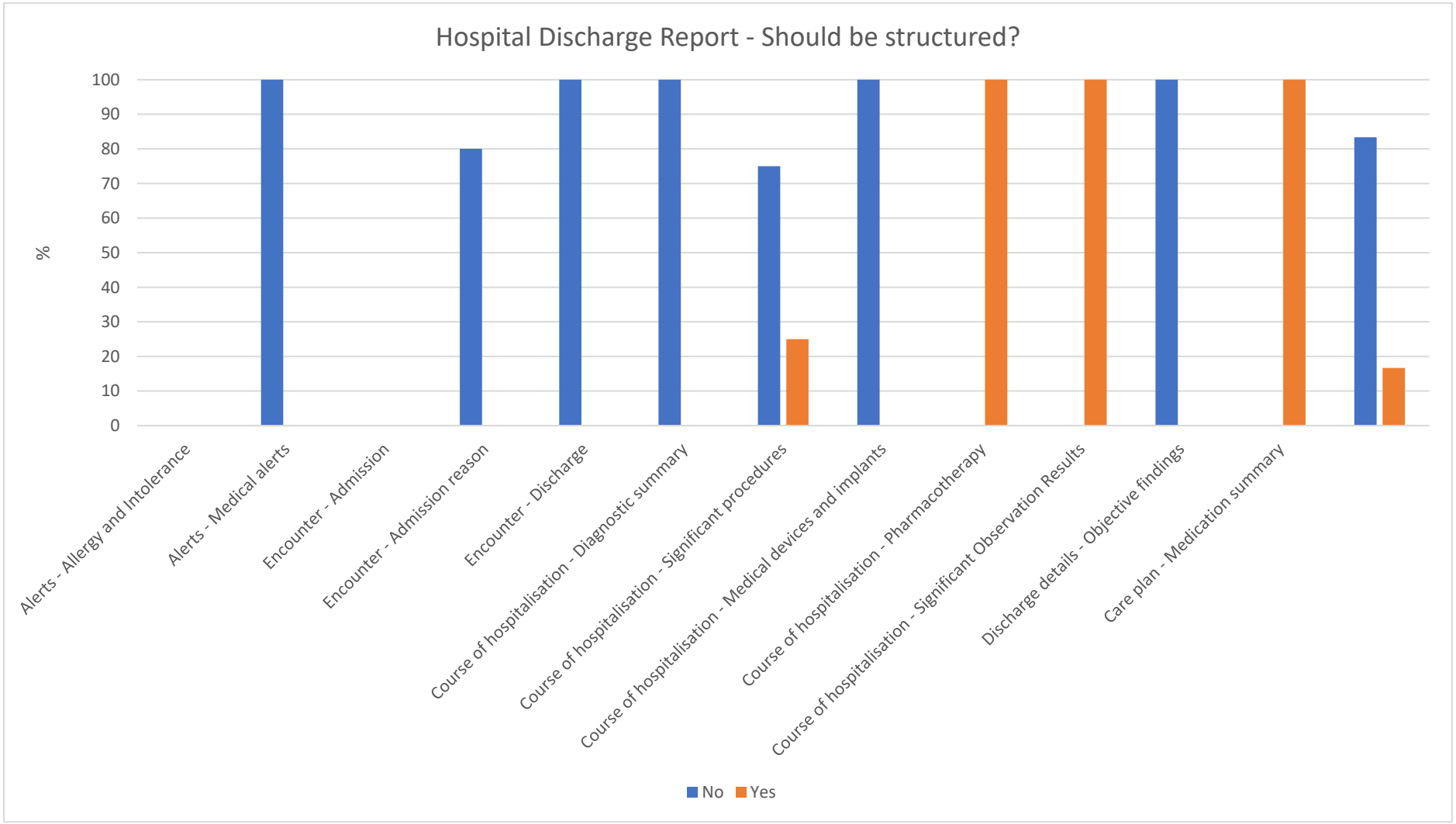

Figure 19 - Data should be structured? - hospital discharge report.

4.3.4 Exchange context

For those that considered data groups important or very important, the national and international exchange contexts are also addressed. Regarding the national exchange of information (Figure 20), the exchange between healthcare facilities appears as the most evident across all groups. The other types of exchange are aligned, with the groups least considered being attester, social determinants of health and objective findings. In international exchange (Figure 21), greater value is placed also on the exchange of health information between healthcare facilities across all groups. The other types of exchange are one more time aligned, with the groups least considered being attester, discharge report narrative form, social determinants of health and objective findings.

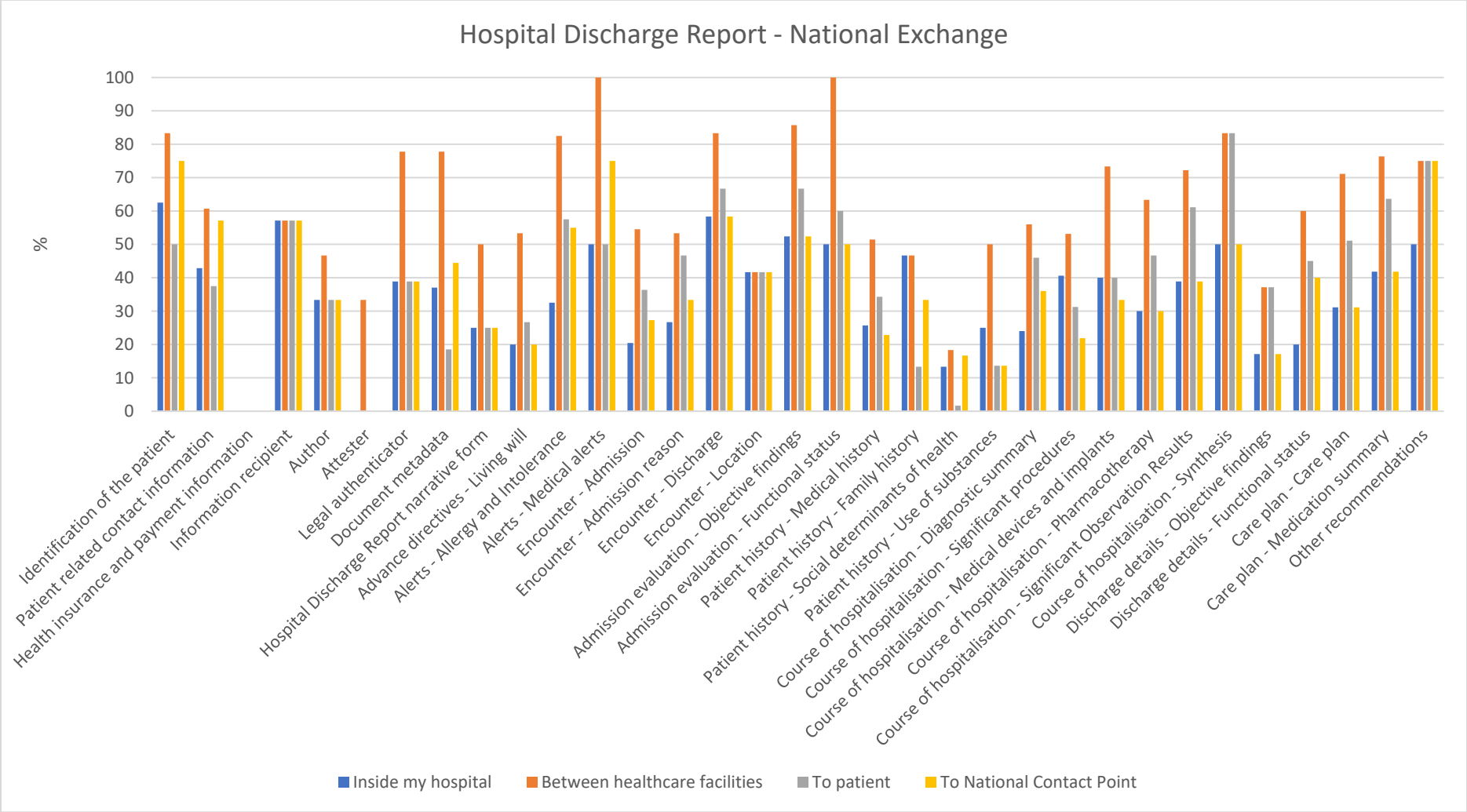

Figure 20 - National exchange context - hospital discharge report.

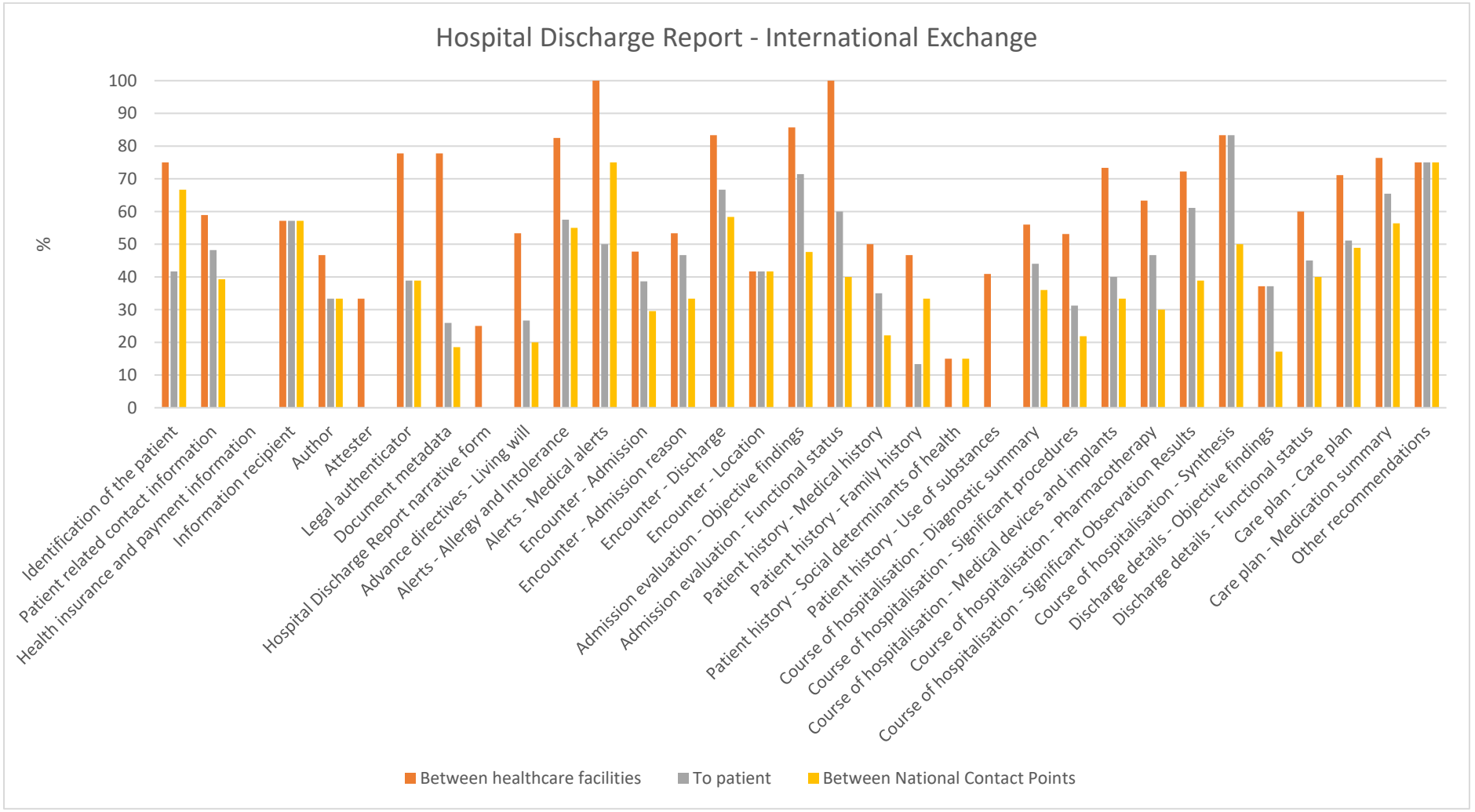

Figure 21 – International exchange context – hospital discharge report.

5 Findings, challenges and barriers

Considering all the work developed with both X-bubbles and "in silico" bubbles, including contributions to surveys, this section presents the set of findings, challenges and barriers identified in this journey. This information is divided by each priority category considered in the XpanDH Bubbles, including a subsection of general and cross-category topics.

5.1 General

- Understanding of what the EEHRxF format is, its goals and benefits - It is very important that all stakeholders clearly understand what EEHRxF is, what objectives are intended to be achieved with its implementation, and what benefits are associated with its adoption. It was found that although several stakeholders are aware of the existence of EEHRxF, they do not understand the objectives of its use and what benefits justify changing the current exchange standards to the EEHRxF.
    - Need to implement large scale targeted campaigns emphasising exchange and why it is needed. Need to develop a detailed analysis that allows to clearly understand the associated benefits and implementation hurdles.
- Means to facilitate collaboration and engagement of the different stakeholders, especially across EU - To make EEHRxF a reality to be adopted by everyone across the EU, it is necessary to engage all actors who participate from the production to the consumption of health data. It was found that getting onboard all these actors is very difficult (lack of time, interest, etc.) so that it is difficult to have everyone's point of view and requirements in the discussions.
    - Need to establish more efficient and effective mechanisms to hear the voices of doctors, nurses, patients/citizens, policy makers, researchers, IT and EHR software vendors.
- Coping with existing diversity across Member States (MS) as well as at national/regional levels in what concerns systems, data models, codes, etc. - The heterogeneity between MS must be considered but also the specificities within each MS at national and regional level.
    - Need for concrete (mandatory) specifications that all systems should follow. Need for consistent mappings between national/regional and international coding systems. Need to have a common European baseline capable of being adapted to national/regional contexts.
- Dealing with unstructured information that is still used and, in many situations, seen as necessary - Usage of clinical original documents is part of the EEHRxF

and is sufficient in some contexts (e.g. send health data do patient). However, this option cannot represent a barrier to the adoption of better data collection methods in order to try to structure the information.

    - Need to introduce appropriate data collection methods or interpretation tools to correctly extract data (and structure it if necessary). Need to have a clear strategy for the use of original clinical documents so as not to hamper data structuring.

5.2 Laboratory report

- Main results from X-Bubbles (detailed information in *D4.3 – (D4.2) XpanDH Feasibility Demonstrators*).
    - Good alignment with the eHN guidelines and between X-bubbles regarding importance of data fields.
        - 41/69 data fields completed aligned, 27/69 data fields optional aligned, and 1 data field not aligned – "Authenticator date and time". No missing fields identified.
    - Structured information available.
        - 21/69 data fields in X-Bubble 1 and 22/69 data fields in X-Bubble 2 are structured; 7/69 data fields in X-Bubble 1 and 31/69 data fields in X-Bubble 2 are unstructured; 41/69 data fields in X-Bubble 1 and 16/69 data fields in X-Bubble 2 are not available.
    - International code systems used or available.
        - LOINC and SNOMED CT used or possible to be obtained by national mapping tables. Identification and administrative (report header) information coded with proprietary codes in X-Bubble 1.
- Success stories using the Laboratory Report EU FHIR IG – success experimentation conversion from national used format (Austria and Portugal).
- Dealing with national code systems – Some countries have national strategy, and their code systems catalogues with mapping for international ones, but others not. Also, some countries have national data exchange based on unstructured data, with each laboratory using its own coding system.
    - Need for national strategies aligned with international code systems.
- The list of LOINC and SNOMED CT code systems is very extensive.
    - Need for an agreement on appropriate subset of value sets would be relevant (depending on condition).

- Missing field from online survey – Data protection flag, to be considered in results transmission and processing for "highly sensitive" data.

5.3 Patient summary

- Data availability – The majority of the data fields for construct a patient summary are available in the current systems.
    - In many countries the required information is not integrated in a single document patient summary compliant. As the information is already available in the systems and accessed by physicians, the construction of the patient summary is only carried out when it is necessary to deliver it to the patient or send it cross-border.
    - In the ones that the patient summary is available, the approach used is mostly aligned with the International Patient Summary (IPS) in a HL7 CDA document.
- Build and update – In order to harmonize patient summaries, it is necessary to find agreed strategies for their construction and updating.
    - Who has responsibility for creating and updating the patient summary is not clear in all countries. In some cases, there is a responsible doctor (e.g. family doctor), in others there are automated systems that collect the information.
    - Different strategies for deciding what information should be included in the patient summary in fields such as results, past medicines, history of problems, etc. In some cases, the most recent ones are chosen (e.g. the last six months), in other cases it is a decision by the doctor responsible for the patient summary, and finally others make all the information available.
- Merge and harmonization - For the patient, it is important to have their patient summary with all relevant information. In reality, what exists are several patient summaries in different institutions (e.g. public and private)
    - Need for strategies to aggregate the patient summaries in one single document.
- No missing fields are indicated in onlyne survey.

5.4 Hospital discharge report

- Main results from X-Bubbles (detailed information in *D4.3 – (D4.2) XpanDH Feasibility Demonstrators*).

- Difficult alignment with the eHN guidelines and between X-bubbles regarding importance of data fields for a general structure.
  - 24/249 data fields completed aligned, 113/249 data fields optional aligned, and 112/249 data field not aligned.
- Structured information available.
  - 80/249 data fields in X-Bubble 3, 61/249 data fields in X-Bubble 4&5 and 44/249 data fields in X-Bubble 6 are structured; 147/249 data fields in X-Bubble 3, 72/249 data fields in X-Bubble 4&5 and 49/249 data fields in X-Bubble 6 are unstructured; 22/249 data fields in X-Bubble 3, 28/249 data fields in X-Bubble 4&5 and 156/249 data fields in X-Bubble 6 are not available.
- International code systems used or available.
  - X-Bubble 3 and X-Bubble 4&5 using some international coding systems. X-Bubble 6 using national proprietary format and coding system. X-Bubble 4&5 provided some specific value sets needed in their context to make the EEHRxF useful in Greek context.
- Missing fields: Admitting weight, Hospitalization outcome, ID organization, ID department.

- Deal with plain text - In many organizations, much of the information in a hospital discharge report is provided in a block in plain text and not in a structured way. This is a challenge in structuring the data, as a hospital discharge report consists of information from different areas (administrative, clinical, etc).
- List of data fields very large - In order to cover the entire course of any hospitalization, the list considered is quite large
  - An agreement on appropriate subset (depending on speciality) can reduce the list of data fields.
- Dealing with national code systems – Some countries have some alignment with the international code systems, considered their usage or mapping table between the national ones and the international. However, other countries use their proprietary codes that need discussion and strategies for mapping.
  - Usage of national implementations of ICD-10 is quite common. The transition to ICD-11 is not expected in the short term.

6 Final remarks

This document discusses the findings from a series of workshops and online surveys conducted as part of the XpanDH project. The main goal was to explore the adoption of the European Electronic Health Record Exchange Format (EEHRxF) across multiple stakeholders, including healthcare providers, policymakers, and technical partners.

Key findings from the workshops and surveys highlighted both the potential and the challenges of adopting EEHRxF. Among the main challenges identified were the variability in digital health infrastructure across EU countries, lack of common coding standards, and the need for stronger collaboration among stakeholders. The workshops identified technical and organizational barriers to data exchange, but also showcased promising pilot projects and the readiness of some stakeholders to implement EEHRxF. Surveys further revealed gaps in alignment with EEHRxF standards, particularly in hospital discharge reports, which vary significantly in their use of coding systems and structuring practices.

While XpanDH has made significant strides, more work is needed to harmonize efforts across regions and to ensure the full potential of EEHRxF is realized. As next steps, the lessons learned taken from the X-Bubbles will continue to be compiled and will be presented in *D4.4 – (D4.3) X-Bundle refinement Report (M24)*.

Annex I – Survey results Laboratory report

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Report header: Identification of the patient	0	1	9	3	24	33	45	47	37	43	43	34	42				
Name	2	0	8	0	5	5	7	8	6	8	8	6	7	Dutch basis data set; Local/Loinc/Snomed; Full name; Surname and 1:N given names	1	4	FHIR HumanName
Date of birth	0	2	8	0	4	6	8	8	6	8	8	7	9	ISO 8601; ISO 8601; ISO 8601; ISO 8601; ISO 8601; Dutch basic data set	3	1	ISO 8601; ISO 8601; ISO 8601
Personal identifier	1	1	8	0	4	6	8	9	7	9	8	6	8	Dutch Basis Data SET; National Ministry of Internal Affairs; 9 numbers; GS1; Danish unique Central Person Register; Fiscal code	1	3	FHIR Identifier
Gender	0	3	7	0	4	6	8	8	6	8	8	7	9	HL7 Administrative Gender; HL7 Administrative Gender; HL7 Administrative Gender; HL7 Administrative Gender; Dutch Basis Data Set; Gender is part of the national patient-ID (CPR) even/odd numbers.	3	1	HL7 Administrative Gender; HL7 Administrative Gender; HL7 Administrative Gender
Address	2	4	4	2	3	5	6	7	6	6	5	3	5	ISO 3166; ISO 3166; ISO 3166; ISO 3166; Dutch Basis Data Set	2	1	ISO 3166; ISO 3166
Telecom	2	4	4	1	4	5	8	7	6	4	6	5	4	none; National; E-mail e phone (9 digits); String; none	0	4	
Report header: Health insurance and payment information	8	2	0	0	6	0	3	3	3	6	3	3	6				
Health insurance code	0	1	1	0	2	0	1	1	1	2	1	1	2		0	2	
Health insurance name	0	2	0	0	2	0	1	1	1	2	1	1	2		0	2	
Health insurance number	0	2	0	0	2	0	1	1	1	2	1	1	2		0	2	

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Report header: Information recipient	4	1	5	12	9	15	31	30	28	24	26	23	19				
Recipient identifier	0	1	5	1	2	3	6	6	4	5	5	3	5	National; Danish national SOR classification; fiscal code	0	2	
Recipient name	0	3	3	1	2	3	6	6	5	5	5	4	4	National; Text; internal	0	2	
Recipient organization	0	5	1	1	2	3	6	6	6	5	5	5	4	National; Text; STS11	0	2	
Address	1	3	2	3	1	2	5	4	5	3	4	4	2	ISO 3166 ;ISO 3166	0	1	
Country	1	3	2	3	1	2	4	4	4	3	4	4	2	ISO 3166; ISO 3166	1	0	ISO 3166
Telecom	1	2	3	3	1	2	4	4	4	3	3	3	2	National; internal	0	1	
Report header: Author	2	2	6	5	10	9	20	20	20	18	21	19	19				
Author identifier	1	1	6	2	3	3	7	6	6	6	7	5	7	National; regional 6 digit number; fiscal code	1	2	FHIR Identifier
Author name	1	1	6	2	3	3	7	6	7	5	6	6	5	National; Full name; local	1	2	FHIR HumanName
Author organization	0	2	6	1	4	3	6	8	7	7	8	8	7	National; Institution name; Local Danish classification	1	3	FHIR Organization
Report header: Legal authenticator	3	3	4	6	18	4	22	22	21	24	22	21	24				
Legal authenticator	0	3	4	2	4	1	6	6	5	6	6	5	6	National	1	3	Regional 6 digit number
Legal authenticator name	1	2	4	2	4	1	5	5	5	6	5	5	6	National	1	3	Full name
Legal authenticator organization	1	1	5	1	5	1	5	5	5	6	5	5	6	National	2	3	Institution name; FHIR Organization
Authentication date and time	0	3	4	1	5	1	6	6	6	6	6	6	6	ISO 8601	3	2	ISO 8601; ISO 8601; ISO 8601
Report header: Result validator	1	4	5	12	18	6	26	20	22	20	26	22	19				
Result validator identifier	2	3	4	3	4	2	7	5	5	5	7	5	4	National; Danish SOR classification (HCP ID's)	2	2	Regional 6 digit number; FHIR Identifier
Result validator name	2	4	3	3	5	1	6	5	5	5	6	5	5	National	2	3	Full name; FHIR HumanName
Result validator organisation	2	3	4	3	5	1	6	5	6	5	6	6	5	National	2	3	Institution name; FHIR Organization
Validation date and time	2	3	4	3	4	2	7	5	6	5	7	6	5	ISO 8601; ISO 8601	3	1	ISO 8601 ;ISO 8601; ISO 8601

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Report header: Laboratory report metadata	3	3	4	28	27	8	37	38	28	47	50	32	40				
Document type	0	3	4	2	4	1	5	5	4	6	6	4	5	LOINC	3	1	LOINC; LOINC; LOINC
Document status	0	3	4	3	3	1	5	5	5	6	6	5	5	HL7:DiagnosticReportStatus	2	1	HL7:DiagnosticReportStatus; HL7:DiagnosticReportStatus
Report date and time	0	2	5	2	4	1	5	5	4	6	6	4	5	ISO 8601	3	1	ISO 8601; ISO 8601; ISO 8601
Document title	0	6	1	2	4	1	4	4	3	5	5	3	4	LOINC	0	4	
Study type	1	2	4	4	2	1	4	4	3	5	6	4	5	Local Danish	1	1	SNOMED CT
Report custodian	3	2	2	4	2	1	2	2	1	3	4	2	3	Danish SOR classification	0	2	
Confidentiality	0	2	5	3	3	1	4	5	2	6	6	3	5	Local Danish	2	1	HL7:Confidentiality; HL7:Confidentiality
Language	1	3	3	5	2	0	3	3	3	5	5	4	4		1	1	BCP 47
Version	1	3	3	3	3	1	5	5	3	5	6	3	4	Local MedCom versions	0	3	
Order information	0	5	5	21	18	21	45	45	38	43	50	37	41				
Order Id	0	5	5	3	3	4	8	7	5	5	7	4	4	Local; local numeric code; Danish unique order-ID (called NPN); national	0	3	
Order date and time	0	4	6	3	3	4	8	8	8	8	9	8	8	ISO 8601; ISO 8601; ISO 8601; ISO 8601	2	1	ISO 8601; ISO 8601
Order placer identifier	1	6	3	3	3	4	8	8	4	8	9	4	7	Local; local numeric code; Danish SOR classification; local	0	3	
Order placer name	1	5	4	3	4	3	8	8	7	8	9	7	8	National; institution name; Text	0	4	
Order placer contact details	3	4	3	5	3	2	6	6	6	6	7	6	6	National; email and phone	0	3	
Order placer organization	1	5	4	4	2	4	7	8	8	8	9	8	8	National; institution name; Text; STS11	0	2	
Order reason	0	4	6	2	5	3	7	8	8	7	8	8	7				
Problem / diagnosis / condition description	1	2	7	2	5	3	7	8	8	7	8	8	7	ICD-10; SNOMED-CT; ICD-10; SNOMED-CT; ICD-10; SNOMED-CT; National Diagnose thesaurus; ICPC2	4	1	ICD-11; ICD-10; ICD-11; SNOMED-CT; Orphacode; ICD-10; SNOMED-CT; Orphacode
Specimen information	1	3	6	26	20	35	65	53	46	60	60	48	59				
Specimen identifier	0	3	6	2	2	5	8	7	4	7	7	5	6	Local; Institution name; SNOMED; Local Danish unique sample-ID (called NPN); internal	0	2	

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Type of species	0	2	7	2	3	4	8	7	7	8	8	7	8	SNOMED CT; SNOMED CT; SNOMED CT; Local Danish	2	1	SNOMED CT
Material	0	3	6	2	2	5	8	7	6	7	8	6	7	SNOMED CT; SNOMED CT; SNOMED CT; Local Danish; LOINC, referenced with the observation code	1	1	SNOMED CT
Collection period	0	2	7	2	2	5	8	7	6	8	8	6	8	ISO 8601; ISO 8601; ISO 8601; ISO 8601; ISO 8601	1	1	ISO 8601
Anatomic location	0	4	5	3	3	3	7	5	5	6	6	5	6	SNOMED CT; SNOMED CT; Local Danish	2	1	SNOMED CT
Morphology	1	3	5	4	2	3	6	5	4	6	6	4	6	SNOMED CT; SNOMED CT; Local Danish	1	1	SNOMED CT
Source Device	2	4	3	6	1	2	4	3	2	4	4	3	4	SNOMED CT; SNOMED CT	0	1	
Collection procedure/method	0	3	6	3	3	3	8	6	7	8	7	7	8	SNOMED CT; SNOMED CT; Local Danish	1	2	SNOMED CT
Received date	0	4	5	2	2	5	8	6	5	6	6	5	6	ISO 8601; ISO 8601; ISO 8601; ISO 8601; ISO 8601	1	1	
Results data elements: Laboratory report narrative	0	3	7	6	12	2	16	17	17	16	18	17	16				
Narrative report	0	5	5	4	5	1	8	9	8	8	9	8	8	SNOMED	2	3	none; SNOMED CT
Comments, interpretation and recommendations	0	2	8	2	7	1	8	8	9	8	9	9	8	SNOMED	3	4	none; SNOMED CT; FHIR Observation
Results data elements: Observation details	0	3	7	56	48	36	88	79	61	81	92	64	84				
Observation date	0	4	6	3	3	4	7	7	5	7	8	5	7	ISO 8601; ISO 8601; ISO 8601; ISO 8601	2	1	ISO 8601; ISO 8601
Observation code	0	1	9	4	2	4	7	7	3	7	8	3	7	LOINC; SNOMED CT; LOINC; SNOMED CT; NPU; LOINC; Local; NPU + some local codes	1	1	LOINC; SNOMED CT
Observation name	0	4	6	4	3	3	5	5	7	6	7	6	6	Local; None; LOINC	1	2	Text
Observation original name	2	5	3	5	3	2	5	5	2	6	6	2	6	Local; None	2	1	Text; FHIR CodeableConcept.text
Observation display name	0	7	3	4	3	3	6	6	3	6	7	3	6	Local; None; LOINC	1	2	Text
Observation method	1	3	6	5	4	1	6	5	3	5	6	3	6	SNOMED CT	3	1	SNOMED CT
Observation device	2	3	5	6	3	1	6	4	4	4	5	4	5	SNOMED CT	1	2	SNOMED CT

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	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Order	2	5	3	4	2	4	6	4	3	4	6	4	5	Local; None; Local Danish classification; Local	1	1	Number
Performer	1	5	4	4	3	3	7	5	3	5	6	4	5	Local; None; fiscal code	1	2	Regional 6 digit number
Reporter	2	5	3	4	3	3	6	5	3	5	6	4	5	Local; None; fiscal code	1	2	Regional 6 digit number
Observation result	0	1	9	2	5	3	7	7	8	7	8	8	7	UCUM; SNOMED CT; UCUM; UCUM; Local; LOINC	3	2	SNOMED CT; SNOMED CT; UCUM; SNOMED CT; UCUM
Observation interpretation	0	1	9	2	6	2	7	7	8	7	7	8	7	SNOMED CT; HL7 v3 Code System ObservationInterpretation; HL7 V2	3	3	SNOMED CT; HL7 v3 Code System ObservationInterpretation; SNOMED CT; HL7 v3 Code System ObservationInterpretation
Result description	0	2	8	3	5	2	7	7	7	7	7	7	7	Local/LOINC; None	2	3	none; Text
Accreditation status	2	5	3	6	3	1	6	5	2	5	5	3	5	Local	1	2	ISO

Original Clinical Document								
Original Clinical Document		National Exchange				International Exchange		
No	Yes	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points
4	6	3	4	3	2	1	1	0

Annex II – Survey results Patient Summary

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Patient Summary Header																	
Identification of the patient	1	0	5	2	8	30	32	32	26	32	30	24	30				
National healthcare patient ID	0	0	5	1	1	3	4	4	3	4	3	2	3	N/A; local; 9-digit number; Denmark CPR number	1	0	Do not know
Name	0	0	5	0	1	4	4	4	3	4	4	3	4				
Date of birth	0	0	5	0	1	4	4	4	3	4	4	3	4	ISO 8601; ISO 8601; ISO 8601; Denmark CPR number	1	0	ISO 8601
Gender	0	0	5	0	1	4	4	4	3	4	4	3	4	HL7 Administrative Gender; HL7 Administrative Gender; HL7 Administrative Gender; DK Administrative Gender Supplement.	1	0	HL7 Administrative Gender
Country of affiliation	0	3	2	0	1	4	4	4	3	4	4	3	4	ISO 3166; ISO 3166; ISO 3166; ISO 3166	1	0	ISO 3166
Patient address	2	1	2	0	1	4	4	4	3	4	3	2	3	ISO 3166; ISO 3166; ISO 3166; ISO 3166	1	0	ISO 3166
Telephone	0	2	3	0	1	4	4	4	4	4	4	4	4				
Email	0	3	2	1	1	3	4	4	4	4	4	4	4				
Preferred HP to contact	0	4	2	7	8	21	29	30	27	24	24	29	24				
Name of the HP	0	3	3	1	2	3	5	5	5	4	4	5	4				
Role of the HP	0	3	3	1	1	4	5	5	5	4	4	5	4	not known; NUCC Provider Codes (U.S.); Text; Local Danish SOR	1	0	Do not know
HP Organisation	0	5	1	1	1	4	4	5	4	4	4	4	4	not known; N/A; Text; Local Danish SOR	1	0	Do not know
Telephone	0	4	2	1	1	4	5	5	5	4	4	5	4				
Email	0	3	3	1	1	4	5	5	5	4	4	5	4				

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Network affiliation	2	3	1	2	2	2	5	5	3	4	4	5	4	not known; Local Danish SOR	1	1	Do not know
Contact person/ legal guardian	1	2	3	7	6	12	20	20	19	19	18	17	17				
Role of that person	0	2	3	2	1	2	4	4	4	4	3	3	3	HL7 RoleClass; Local Danish	1	0	HL7 RoleClass
Relationship level	0	3	2	2	1	2	4	4	3	3	3	2	2	HL7 RoleClass; Local Danish	1	0	HL7 RoleClass
Name	0	1	4	1	2	2	4	4	4	4	4	4	4				
Telephone	0	1	4	1	1	3	4	4	4	4	4	4	4				
Email	0	2	3	1	1	3	4	4	4	4	4	4	4				
Insurance Information	1	4	1	3	0	2	0	1	0	2	2	1	3				
Insurance number	1	2	2	3	0	2	0	1	0	2	2	1	3	N/A; Local Danish CVR	0	0	
Document data	0	2	4	6	2	10	14	14	14	12	14	14	12				
Date created	0	3	3	1	1	4	5	5	5	4	5	5	4	ISO 8601; ISO 8601; ISO 8601; ISO 8601	1	0	ISO 8601
Date of last update	0	2	4	2	0	4	5	5	5	4	5	5	4	ISO 8601; ISO 8601; ISO 8601; ISO 8601	0	0	
Nature of the PS	1	2	3	3	1	2	4	4	4	4	4	4	4	Text; ?	1	0	Do not know
Author and Organisation	0	4	2	6	2	4	6	6	4	8	4	2	8				
Author organisation	0	3	3	3	1	2	3	3	2	4	2	1	4		0	0	
Legal authenticator	0	3	3	3	1	2	3	3	2	4	2	1	4	N/A; Local Danish SOR	0	1	
Additional information / Knowledge resources	4	1	1	2	0	0	0	0	0	2	1	2	2				
External reference	0	1	1	2	0	0	0	0	0	2	1	2	2				
Patient Summary Body																	
Alerts - Allergy	0	1	5	29	13	18	33	43	37	33	41	35	30				
Allergy description	0	1	5	2	2	2	4	5	5	4	5	5	4				
Type of propensity	0	2	4	3	1	2	3	4	4	3	4	4	3	SNOMED CT GPS; SNOMED CT GPS	1	0	NPU
Allergy manifestation	0	3	3	3	1	2	3	4	4	3	3	3	2	SNOMED CT GPS; SNOMED CT GPS	1	0	?
Severity	0	2	4	3	1	2	3	4	3	3	4	3	3	SNOMED CT GPS	1	0	?
Criticality	0	1	5	3	1	2	4	5	4	4	5	4	3	SNOMED CT GPS	1	0	?

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	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Onset date	0	3	3	3	1	2	3	4	3	3	4	3	3	ISO 8601; ISO 8601	1	0	ISO 8601
End Date	0	3	3	3	1	2	3	4	3	3	4	3	3	ISO 8601; ISO 8601	1	0	ISO 8601
Status	0	3	3	3	1	2	3	4	3	3	3	2	2	SNOMED CT GPS; SNOMED CT GPS	1	0	?
Certainty	1	2	3	4	2	0	3	4	3	3	4	3	3		2	0	SNOMED CT GPS; ?
Agent or Allergen	0	1	5	2	2	2	4	5	5	4	5	5	4	SNOMED CT GPS; ATC	2	0	SNOMED CT GPS; ?
Alerts - Medical alert information	0	2	4	3	2	1	2	2	2	3	5	5	4				
Healthcare alert description	0	1	5	3	2	1	2	2	2	3	5	5	4				
Medical history - Vaccination/ prophylaxis information	0	1	5	36	9	27	41	53	44	40	47	36	35				
Disease or agent targeted	0	2	4	2	2	2	4	5	4	4	5	4	4	ICD-10	2	0	ICD-10; SNOMED CT GPS; ICD-10
Vaccine/prophyl axis	0	2	4	2	1	3	4	5	5	4	5	5	4	ATC; Text	1	0	SNOMED CT GPS
Vaccine medicinal product name	0	3	3	2	2	2	4	5	5	3	4	3	3	CVX; ?	1	1	Do not know
Identifier of the vaccine medicinal product	0	4	2	3	1	2	3	4	3	3	3	1	2	?	1	0	EMA PMS
Marketing Autorisation Holder	4	1	1	5	0	1	3	4	3	3	4	2	3	?	0	0	
Number in a series of vaccinations/doses	0	2	4	4	0	2	3	4	3	3	4	3	3				
Batch/lot number	0	4	2	2	1	3	4	5	3	4	3	2	2				
Date of vaccination	0	1	5	3	0	3	3	4	4	3	4	4	3	ISO 8601; ISO 8601; ISO 8601	0	0	
Administering centre	2	3	1	3	0	3	3	4	3	3	3	2	2	N/A; Text; Local Danish SOR	0	0	
Health Professional identification	2	2	2	3	0	3	3	4	3	3	3	2	2	N/A; regional 6-digit number; Local Danish	0	0	
Country of vaccination	1	2	3	5	0	1	3	4	3	3	4	3	3	ISO 3166	0	0	
Next vaccination date	0	2	4	2	2	2	4	5	5	4	5	5	4	ISO 8601; ISO 8601	1	1	ISO 8601
Medical history - Resolved, closed or inactive problems	2	1	3	8	2	6	8	12	10	8	10	8	6				

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	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Problem description	0	2	2	1	1	2	2	3	3	2	3	3	2	ICD-10; Orphacode if rare disease is diagnosed	1	0	ICD-10
Onset date	0	2	2	2	0	2	2	3	2	2	2	1	1	ISO 8601; ISO 8601	0	0	
End date	0	2	2	2	0	2	2	3	2	2	3	2	2	ISO 8601; ISO 8601	0	0	
Resolution circumstances	2	1	1	3	1	0	2	3	3	2	2	2	1				
Medical history - Medical history	1	2	3	1	2	2	3	4	4	3	2	0	2				
Medical history	0	3	2	1	2	2	3	4	4	3	2	0	2				
Medical problems - Current problems	0	0	6	7	3	8	12	15	14	12	14	11	11				
Problem / diagnosis description	0	2	4	2	1	3	4	5	5	4	5	5	4	ICD-10; Orphacode if rare disease is diagnosed; ICD-10	1	0	ICD-10
Onset date	0	2	4	2	0	4	4	5	4	4	4	2	3	ISO 8601; ISO 8601; ISO 8601; ISO 8601	0	0	
Diagnosis assertion status	1	1	4	3	2	1	4	5	5	4	5	4	4	HL7	2	0	HL7; HL7
Medical problems - Medical devices and implants	0	1	5	14	0	10	16	20	14	16	20	14	16				
Device and implant description	0	1	5	4	0	2	4	5	5	4	5	5	4	Not available	0	0	
Device ID	0	4	2	4	0	2	4	5	3	4	5	3	4	GS1, HIBC, ICCBBA; Not available	0	0	
Implant date	0	3	3	3	0	3	4	5	3	4	5	3	4	ISO 8601; ISO 8601; ISO 8601	0	0	
End date	0	2	4	3	0	3	4	5	3	4	5	3	4	ISO 8601; ISO 8601; ISO 8601	0	0	
Medical problems - Procedures	1	2	3	7	3	5	9	12	9	9	12	9	9				
Procedure description	0	2	3	2	1	2	3	4	4	3	4	4	3	ICD10	1	0	
Body site	0	2	3	2	2	1	3	4	3	3	4	3	3		1	1	
Procedure date	0	3	2	3	0	2	3	4	2	3	4	2	3	ISO 8601; ISO 8601	0	0	
Medical problems - Functional status	0	4	2	16	4	10	17	22	18	17	20	16	11				
Description	0	2	4	3	1	2	4	5	5	4	5	4	3				
Onset Date	1	2	3	3	1	2	4	5	3	4	4	3	2	ISO 8601; ISO 8601	1	0	ISO 8601

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Functional assessment description	1	2	3	4	0	2	3	4	3	3	4	3	2	ICF	0	0	
Functional assessment date	1	2	3	3	1	2	3	4	3	3	4	3	2	ISO 8601; ISO 8601	1	0	ISO 8601
Functional assessment result	1	2	3	3	1	2	3	4	4	3	3	3	2	ICF	1	0	ICF
Medication summary - Current and relevant past medicines	0	1	5	21	19	14	35	44	35	35	42	31	32				
Medication reason	0	2	4	3	2	1	4	5	5	4	5	4	3		1	1	ICD-10; SNOMED CT GPS; Orphacode if rare disease is diagnosed
Intended use	0	3	3	3	2	1	4	5	4	4	4	3	3	N/A	0	2	
Brand name	0	4	2	2	2	2	4	5	5	4	5	4	4	N/A; Infarmed code	1	1	Do not know
Active ingredient lists	0	3	3	2	2	2	4	5	3	4	5	3	4	ATC	2	0	ATC; ATC; IDMP
Strength	1	2	3	2	2	2	3	4	3	3	4	3	3	Local Danish	2	0	EDQM Standard Terms; UCUM; EDQM Standard Terms
Pharmaceutical dose form	0	1	5	2	2	2	4	5	4	4	5	4	4	Local Danish	2	0	EDQM Standard Terms; EDQM Standard Terms
Dosage Regimen	0	1	5	2	3	1	4	5	4	4	5	4	4	N/A	2	1	SNOMED; Do not know
Route of administration	0	1	5	2	3	1	4	5	4	4	4	3	3		2	1	EDQM Standard Terms; EDQM Standard Terms
Date of onset of treatment	0	1	5	3	1	2	4	5	3	4	5	3	4	ISO 8601; ISO 8601	1	0	ISO 8601
Social history	3	2	1	2	0	4	2	2	0	0	4	4	2				
Social history observations related to health	0	2	1	1	0	2	1	1	0	0	2	2	1	SESARAM	0	0	
Reference date range	0	2	1	1	0	2	1	1	0	0	2	2	1	ISO 8601; Data	0	0	
Pregnancy history - Current pregnancy status	0	2	4	9	1	8	4	7	2	2	15	14	12				
Date of observation	0	2	4	3	0	3	1	3	0	1	5	4	4	ISO 8601; ISO 8601; ISO 8601	0	0	
Status	0	1	5	3	1	2	1	2	1	1	5	5	4	Local Danish	0	1	
Expected date of delivery	0	2	4	3	0	3	2	2	1	0	5	5	4	ISO 8601; ISO 8601; ISO 8601	0	0	

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Pregnancy history - History of previous pregnancies	1	4	1	12	1	7	7	5	0	1	16	12	15				
Previous pregnancies status	1	2	2	3	0	2	3	1	0	0	4	3	4	SNOMED CT GPS	0	0	
Outcome date	1	4	0	3	0	2	2	1	0	0	4	3	3	ISO 8601; ISO 8601	0	0	
Outcome	1	4	0	3	1	1	1	2	0	0	4	3	4		0	1	
Number of children	0	5	0	3	0	2	1	1	0	1	4	3	4				
Patient provided data - Travel history	2	3	1	4	4	0	2	2	0	2	6	4	6				
Country	0	2	2	2	2	0	1	1	0	1	3	2	3		2	0	ISO 3166; ISO 3166
Period	0	2	2	2	2	0	1	1	0	1	3	2	3		2	0	ISO 8601; ISO 8601
Patient provided data - Advance Directive	4	1	1	0	1	1	0	0	0	1	1	1	1				
Documentation	0	2	0	0	1	1	0	0	0	1	1	1	1		0	1	
Results - Result observations	2	2	2	5	11	12	21	21	21	21	18	18	18				
Date	0	1	3	0	1	3	3	3	3	3	3	3	3	ISO 8601; ISO 8601; ISO 8601	1	0	ISO 8601
Observation type	0	1	3	1	1	2	3	3	3	3	3	3	3	Local Danish	1	0	HL7 ObservationCategoryCodes
Result description	0	1	3	0	3	1	3	3	3	3	3	3	3				
Observation details	0	2	2	1	2	1	3	3	3	3	2	2	2		1	1	LOINC
Observation results	0	1	3	1	2	1	3	3	3	3	3	3	3		1	1	UCUM
Performer	1	1	2	1	1	2	3	3	3	3	2	2	2	N/A; Local Danish	0	1	
Reporter	1	1	2	1	1	2	3	3	3	3	2	2	2	N/A; Local Danish SOR	0	1	
Plan of Care	1	4	1	2	1	2	1	1	0	1	4	4	4				
Plan of care	0	3	2	2	1	2	1	1	0	1	4	4	4	N/A; ?	0	1	

Original Clinical Document								
Original Clinical Document		National Exchange				International Exchange		
No	Yes	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points
4	2	1	2	2	2	2	2	2

Annex III – Survey results Hospital discharge report

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
HEADER																	
Identification of the patient	1	0	4	6	5	13	15	20	12	18	18	10	16				
Name	0	0	4	1	1	2	3	4	2	3	4	2	4				
Date of birth	1	0	3	1	1	2	2	3	2	2	3	2	3				
National healthcare patient ID	1	0	3	1	0	3	3	4	2	4	3	1	3				
Nationality	1	1	2	1	1	2	2	3	2	3	3	2	2				
Gender	1	0	3	1	1	2	3	3	2	2	3	2	2				
Country of affiliation	1	2	1	1	1	2	2	3	2	4	2	1	2				
Patient related contact information	1	3	1	26	18	12	24	34	21	32	33	27	22				
Patient Address	2	1	1	1	1	2	1	2	1	1	2	2	1				
Patient Telecom	1	1	2	1	1	2	2	3	2	3	3	3	2				
Identifier of the HP	2	1	1	1	1	2	2	3	1	3	2	2	1				
Name of the HP	2	0	2	1	2	1	3	4	2	4	4	4	3				
Role of the HP	2	1	1	2	2	0	1	2	1	2	2	2	1				
HP Organisation	2	0	2	1	2	1	3	4	2	4	4	4	3				
HP Address	3	1	0	2	2	0	0	0	0	0	0	0	0				
HP Telecom	2	1	1	2	1	1	1	2	1	1	3	2	2				
Role of contact person	0	3	1	2	1	1	2	3	1	2	2	1	1				
Relationship level of contact person	2	1	1	2	1	1	1	2	2	2	2	1	1				
Name of contact person	0	3	1	2	2	0	3	4	3	4	4	3	3				
Address of contact person	4	0	0	4	0	0	0	0	0	0	0	0	0				
Telecom of contact person	2	1	1	3	1	0	3	3	3	4	3	2	2				
Contact person organisation	2	2	0	2	1	1	2	2	2	2	2	1	2				
Health insurance and payment information	5	0	0	0	0	0	0	0	0	0	0	0	0				
Health insurance code	0	0	0	0	0	0	0	0	0	0	0	0	0				

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Health insurance name	0	0	0	0	0	0	0	0	0	0	0	0	0				
Health insurance number	0	0	0	0	0	0	0	0	0	0	0	0	0				
Information recipient	4	0	1	3	2	2	4	4	4	4	4	4	4				
Recipient identifier	0	0	1	0	0	1	1	1	1	1	1	1	1				
Recipient name	0	1	0	0	1	0	1	1	1	1	1	1	1				
Recipient organisation ID	0	1	0	0	0	1	1	1	1	1	1	1	1				
Recipient organisation	0	1	0	0	1	0	1	1	1	1	1	1	1				
Address	1	0	0	1	0	0	0	0	0	0	0	0	0				
Country	1	0	0	1	0	0	0	0	0	0	0	0	0				
Telecom	1	0	0	1	0	0	0	0	0	0	0	0	0				
Author	2	1	2	0	5	10	5	7	5	5	7	5	5				
Author identifier	1	0	2	0	0	3	1	1	0	1	1	0	1				
Author name	1	0	2	0	2	1	1	2	2	1	2	2	1				
Author organisation ID	1	1	1	0	1	2	0	1	0	1	1	0	1				
Author organisation	1	0	2	0	2	1	1	1	1	0	1	1	0				
Date Time	1	0	2	0	0	3	2	2	2	2	2	2	2				
Attester	2	2	1	15	0	0	0	5	0	0	5	0	0				
Attester identifier	1	2	0	3	0	0	0	1	0	0	1	0	0				
Attester name	2	1	0	3	0	0	0	1	0	0	1	0	0				
Attester organisation ID	1	2	0	3	0	0	0	1	0	0	1	0	0				
Attester organisation	1	2	0	3	0	0	0	1	0	0	1	0	0				
Approval date and time	1	2	0	3	0	0	0	1	0	0	1	0	0				
Legal authenticator	2	1	2	5	6	4	7	14	7	7	14	7	7				
Legal authenticator identifier	0	1	2	1	1	1	1	3	1	2	3	1	2				
Legal authenticator name	1	0	2	1	1	1	2	3	2	1	3	2	1				
Legal authenticator organisation ID	0	2	1	1	1	1	0	2	0	1	2	0	1				
Legal authenticator organisation	0	2	1	1	2	0	2	3	2	1	3	2	1				
Authentication date and time	0	1	2	1	1	1	2	3	2	2	3	2	2				
Document metadata	2	2	1	12	3	12	10	21	5	12	21	7	5				

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Document ID	0	1	2	1	0	2	1	3	0	2	3	0	1				
Document type	0	1	2	1	0	2	2	3	1	2	3	1	1				
Document status	0	1	2	1	0	2	2	2	1	1	2	1	1				
Report date and time	0	2	1	1	0	2	2	3	1	2	3	2	1				
Document title	2	1	0	1	2	0	1	2	1	1	2	1	0				
Report custodian	2	1	0	2	1	0	0	1	0	0	1	0	0				
Confidentiality	2	0	1	2	0	1	0	2	0	1	2	0	0				
Language	1	1	1	2	0	1	0	2	0	1	2	1	0				
Version	0	1	2	1	0	2	2	3	1	2	3	1	1				
BODY																	
Hospital Discharge Report narrative form	1	3	1	3	1	0	1	2	1	1	1	0	0				
Advance directives - Living will	2	3	0	10	5	0	3	8	4	3	8	4	3				
Date and time	1	1	1	2	1	0	1	2	1	1	2	1	1				
Type	1	1	1	2	1	0	1	2	1	1	2	1	1				
Comment	1	1	1	2	1	0	0	1	1	0	1	1	0				
Related conditions	1	1	1	2	1	0	0	1	0	0	1	0	0				
Living will document	1	1	1	2	1	0	1	2	1	1	2	1	1				
Alerts - Allergy and Intolerance	1	0	4	26	3	11	13	33	23	22	33	23	22				
Allergy description	0	1	3	1	2	1	2	4	4	3	4	4	3				
Type of propensity	1	0	3	3	0	1	1	3	2	2	3	2	2				
Allergy manifestation	1	0	3	3	0	1	1	3	2	2	3	2	2				
Severity	0	1	3	3	0	1	1	3	2	2	3	2	2				
Criticality	1	0	3	3	0	1	1	3	2	2	3	2	2				
Onset date	1	1	2	3	0	1	1	3	2	2	3	2	2				
End date	1	1	2	3	0	1	1	3	2	2	3	2	2				
Status	1	0	3	3	0	1	1	3	2	2	3	2	2				
Certainty	0	1	3	2	1	1	2	4	2	2	4	2	2				
Agent or Allergen	0	0	4	2	0	2	2	4	3	3	4	3	3	SNOMED CT; ATC	0	0	
Alerts - Medical alerts	1	0	4	2	1	1	2	4	2	3	4	2	3				
Healthcare alert description	0	1	3	2	1	1	2	4	2	3	4	2	3	ACT	0	1	
Encounter - Admission	1	2	2	27	7	10	9	24	16	12	21	17	13				

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Admission urgency	1	3	0	2	0	2	1	2	2	0	2	2	0	hl7:v3xEncounterAdmissionUrgency; hl7:v3xEncounterAdmissionUrgency; SDO	0	0	
Admission date	0	3	1	2	0	2	2	4	3	2	4	3	2	ISO 8601; ISO 8601	0	0	
Admitting professional ID	3	1	0	3	0	1	0	2	0	1	1	0	1				
Admitting professional name	3	0	1	3	0	1	1	2	2	1	2	2	1				
Admitting organisation ID	2	2	0	3	0	1	0	2	0	1	1	0	1				
Admitting organisation	2	1	1	3	0	1	1	2	1	1	2	2	1	STS21	0	0	
Admit Source	3	1	0	3	1	0	0	1	0	0	1	0	0				
Referring professional ID	1	2	1	2	1	1	1	3	1	2	2	1	2				
Referring professional name	2	1	1	2	2	0	1	2	3	1	2	3	2				
Referring organisation ID	1	2	1	2	1	1	1	2	1	2	2	1	1				
Referring organisation	2	1	1	2	2	0	1	2	3	1	2	3	2				
Encounter - Admission reason	0	3	2	8	5	2	4	8	7	5	8	7	5				
Admission reason	0	3	2	2	1	2	3	5	5	4	5	5	4	ICD-10; icd9	0	1	
Admission reason comment	2	3	0	2	3	0	1	2	2	1	2	2	1		0	3	
Admission legal status	3	2	0	4	1	0	0	1	0	0	1	0	0				
Encounter - Discharge	1	2	2	3	1	8	7	10	8	7	10	8	7				
Discharge date	0	1	3	1	0	3	3	4	3	3	4	3	3	ISO 8601; ISO 8601; ISO 8601	0	0	
Discharge destination type	1	1	2	1	0	3	2	3	3	2	3	3	2	Internal cod system; Local; sdo	0	0	
Destination location	1	1	2	1	1	2	2	3	2	2	3	2	2	Internal cod system; HL7	0	1	
Encounter - Location	2	1	2	1	4	7	5	5	5	5	5	5	5				
Period	1	1	1	0	0	3	2	2	2	2	2	2	2	Date; Local; sts21	0	0	
Organisation Part ID	1	2	0	0	1	2	1	1	1	1	1	1	1				
Organisation Part Name	1	1	1	0	2	1	2	2	2	2	2	2	2		0	2	
Organisation Part Details	2	0	1	1	1	1	0	0	0	0	0	0	0		0	1	

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Admission evaluation - Objective findings	2	3	0	8	8	5	11	18	14	11	18	15	10				
Date and time	0	1	2	1	0	2	2	3	1	2	3	2	2				
Anthropometric Observation details	1	1	1	1	2	0	1	2	2	1	2	2	1				
Anthropometric Observation result	0	1	2	1	1	1	2	3	3	2	3	3	1				
Vital signs Result description	1	0	2	1	1	1	1	2	1	1	2	1	1				
Vital signs Observation details	1	1	1	2	1	0	1	2	2	1	2	2	1				
Vital signs Observation result	0	2	1	1	1	1	2	3	3	2	3	3	2				
Physical examination Observation Note	0	2	1	1	2	0	2	3	2	2	3	2	2				
Admission evaluation - Functional status	3	2	0	5	5	0	5	10	6	5	10	6	4				
Description	0	2	0	1	1	0	1	2	1	1	2	1	1				
Onset Date	0	2	0	1	1	0	1	2	1	1	2	1	1				
Functional assessment description	0	2	0	1	1	0	1	2	1	1	2	1	1				
Functional assessment date	0	2	0	1	1	0	1	2	1	1	2	1	1				
Functional assessment result	0	1	1	1	1	0	1	2	2	1	2	2	0				
Patient history - Medical history	1	1	3	86	37	17	36	72	48	32	70	49	31				
Problem description	0	1	3	1	1	2	3	4	4	3	4	4	3				
Problem details	1	1	2	2	1	1	2	3	3	2	3	3	2				
Problem onset date	1	2	1	2	1	1	1	2	1	1	2	1	1				
Problem end date	2	1	1	3	0	1	1	2	1	1	2	1	1				
Problem clinical status	1	2	1	2	1	1	1	2	1	1	2	1	1				
Problem resolution circumstances	2	1	1	3	1	0	0	1	1	0	1	1	0				
Problem severity	1	1	2	2	2	0	1	2	1	1	2	2	1				
Problem stage	1	1	2	2	2	0	2	3	2	2	3	3	2				

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Device and implant description	1	0	3	2	2	0	2	3	3	2	3	3	2				
Device ID	1	1	2	2	2	0	0	1	0	0	1	0	0				
Implant date	1	1	2	2	2	0	2	3	2	2	2	1	1				
Device end date	2	0	2	2	2	0	0	1	0	0	2	1	1				
Device reason	2	0	2	3	1	0	1	2	2	0	2	2	0				
Procedure code	2	0	2	2	1	1	2	3	1	2	3	1	2				
Procedure description	1	1	2	2	1	1	1	3	3	1	3	3	1				
Procedure body site	1	1	2	3	1	0	2	3	3	1	3	3	1				
Procedure date	1	1	2	2	1	1	2	3	2	2	3	2	2				
Procedure reason	1	1	2	2	2	0	1	2	1	0	2	1	0				
Procedure outcome	1	2	1	2	2	0	1	2	0	0	2	0	0				
Procedure focal device	2	1	1	2	2	0	0	1	0	0	0	0	0				
Vaccine disease or agent targeted	1	0	3	2	2	0	2	3	3	2	3	3	2				
Vaccine/prophylaxis	1	1	2	2	1	1	2	3	3	2	3	3	2				
Vaccine medicinal product	1	1	2	2	1	1	1	2	1	1	1	0	0				
Vaccine Marketing Authorisation Holder	3	1	0	3	1	0	0	1	0	0	1	0	0				
Number in a series of vaccinations / doses	1	2	1	2	2	0	1	2	1	1	2	1	1				
Date of vaccination	1	0	3	2	1	1	2	3	2	2	3	2	2				
Next vaccination date	2	2	0	3	0	1	1	2	3	1	2	3	1				
Infectious time period	1	2	1	3	0	1	1	2	1	1	2	1	1				
Infectious agent	1	1	2	3	0	1	1	2	2	1	2	2	1				
Infectious proximity	2	1	1	3	0	1	0	1	0	0	1	0	0				
Infectious country	1	3	0	3	0	1	0	1	0	0	1	0	0				
Infectious additional information	1	3	0	3	1	0	0	1	0	0	1	0	0				
Travel time period	2	2	0	4	0	0	0	1	0	0	1	0	0				
Country visited	2	2	0	4	0	0	0	1	0	0	1	0	0				
Travel comment	2	2	0	4	0	0	0	1	1	0	1	1	0				
Patient history - Family history	2	3	0	6	5	4	7	7	2	5	7	2	5				
Patient relationship	0	3	0	0	1	2	2	2	0	1	2	0	1				
Date of birth	2	0	1	2	0	1	1	1	1	1	1	1	1				
Age or date of death	1	1	1	1	1	1	2	2	1	1	2	1	1				
Condition	1	2	0	1	2	0	1	1	0	1	1	0	1				

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Cause of death	1	1	1	2	1	0	1	1	0	1	1	0	1				
Patient history - Social determinants of health	1	3	1	44	14	2	8	11	1	10	9	0	9				
Work situation	2	2	0	2	2	0	1	1	0	1	1	0	1				
Hobby	3	1	0	3	1	0	0	0	0	0	0	0	0				
Social network	4	0	0	3	1	0	0	0	0	0	0	0	0				
Education level	2	2	0	2	1	1	1	1	0	1	1	0	1				
Education comment	4	0	0	3	1	0	1	1	0	0	1	0	1				
House type	3	1	0	3	1	0	0	0	0	0	0	0	0				
Home adaption	1	3	0	3	1	0	1	2	0	2	2	0	2				
Living conditions	1	3	0	3	1	0	1	2	0	2	2	0	2				
Family situation	2	2	0	3	1	0	1	1	0	1	0	0	0				
Living situation comment	3	1	0	3	1	0	0	0	0	0	0	0	0				
Marital status	3	1	0	2	1	1	1	1	0	1	1	0	1				
Number of children	3	1	0	3	1	0	1	1	1	1	0	0	0				
Number of children at home	2	2	0	4	0	0	0	1	0	1	1	0	1				
Child details	3	1	0	4	0	0	0	0	0	0	0	0	0				
Care responsibility	2	2	0	3	1	0	0	0	0	0	0	0	0				
Patient history - Use of substances	1	2	2	30	8	6	11	22	6	6	18	0	0				
Alcohol use status	1	3	0	2	1	1	2	3	2	2	2	0	0				
Alcohol use period and quantity	1	3	0	3	1	0	1	2	0	0	2	0	0				
Alcohol use comment	4	0	0	3	1	0	0	1	0	0	1	0	0				
Tobacco use status	1	3	0	2	1	1	2	3	2	2	2	0	0				
Tobacco use period and quantity	1	3	0	2	2	0	1	2	0	0	2	0	0				
Tobacco use comment	4	0	0	3	1	0	0	1	0	0	1	0	0				
Drug consumption status	1	3	0	3	0	1	2	3	2	2	2	0	0				
Drug consumption period and quantity	1	3	0	3	0	1	1	2	0	0	2	0	0				
Drug or medication type	1	3	0	3	0	1	1	2	0	0	1	0	0				
Drug route of administration	2	2	0	3	0	1	0	1	0	0	1	0	0				

Field	Importance			Have this information?			National Exchange				International Exchange			Coding System used	Should be structured?		Proposed Coding System
	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Drug consumption comment	3	1	0	3	1	0	1	2	0	0	2	0	0				
Course of hospitalisation - Diagnostic summary	0	0	5	34	12	4	12	28	23	18	28	22	18				
Problem description	0	2	3	2	1	2	3	5	5	4	5	5	4				
Problem details	1	2	2	2	3	0	1	2	2	1	2	2	1		1	2	SNOMED CT
Onset date	2	2	1	3	1	1	2	3	2	2	3	2	2	ISO 8601	0	1	
End date	3	1	1	3	1	1	1	2	1	1	2	1	1				
Category	3	0	2	5	0	0	0	1	0	0	1	0	0		0	0	
Treatment class	2	1	2	5	0	0	0	2	2	1	2	1	1		0	0	
Clinical status	1	2	2	3	2	0	1	3	2	2	3	2	2				
Resolution circumstances	2	2	1	5	0	0	0	2	1	1	2	1	1				
Severity	1	2	2	3	2	0	2	4	4	3	4	4	3				
Stage	1	2	2	3	2	0	2	4	4	3	4	4	3				
Course of hospitalisation - Significant procedures	1	1	3	13	10	9	13	17	10	7	17	10	7				
Procedure code	1	1	2	1	0	3	3	3	1	2	3	2	2	IPS Absent and Unknow Data; ICD10; Local (SKS); icd9cm	0	0	
Procedure description	1	0	3	2	1	1	3	3	3	1	3	3	1				
Body site	1	1	2	1	1	2	2	2	2	1	2	1	1				
Procedure date	1	1	2	1	0	3	3	3	2	2	3	2	2	ISO 8601; ISO 8601; ISO 8601	0	0	
Procedure reason	1	1	2	2	2	0	0	1	0	0	1	0	0				
Outcome	1	2	1	2	2	0	0	1	0	0	1	0	0				
Complication	1	1	2	2	2	0	2	3	2	1	3	2	1				
Focal device	2	1	1	2	2	0	0	1	0	0	1	0	0		0	2	
Course of hospitalisation - Medical devices and implants	2	0	3	8	4	3	6	11	6	5	11	6	5				
Device and implant description	0	0	3	1	1	1	2	3	3	2	3	3	2	icd9cm	1	0	SNOMED CT
Device ID	0	2	1	2	1	0	1	2	0	1	2	0	1				
Implant date	0	1	2	1	0	2	2	3	2	2	3	2	2	ISO 8601; ISO 8601	1	0	ISO 8601
End date	1	1	1	2	1	0	0	1	0	0	1	0	0		1	0	ISO 8601
Reason	0	2	1	2	1	0	1	2	1	0	2	1	0				

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	Not important	Important	Very Important	No	Yes	Yes in structured format	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points	Code	Yes	No	Code
Course of hospitalisation - Pharmacotherapy	2	1	2	10	4	16	9	19	14	9	19	14	9				
Medication reason	1	0	2	1	2	0	1	2	2	1	2	2	1				
Code	0	1	2	1	0	2	0	1	0	0	1	0	0	CHNM; atc	1	0	
Intended use	1	1	1	1	2	0	0	1	1	0	1	1	0				
Brand name	0	3	0	1	0	2	0	1	1	0	1	1	0	Internal code; aic	0	0	
Active ingredient list	0	0	3	1	0	2	2	3	2	2	3	2	2				
Strength	0	2	1	1	0	2	1	2	1	1	2	1	1				
Pharmaceutical dose form	0	0	3	1	0	2	1	2	1	1	2	1	1				
Dosage Regimen	0	1	2	1	0	2	2	3	3	2	3	2	2				
Route of administration	0	0	3	1	0	2	1	2	2	1	2	2	1				
Period of treatment	0	0	3	1	0	2	1	2	1	1	2	2	1	Internal Code; none	0	0	
Course of hospitalisation - Significant Observation Results	2	0	3	12	3	3	7	13	11	7	13	11	7				
Date	0	3	0	2	0	1	2	3	2	2	3	2	2	ISO 8601	0	0	
Observation status	1	1	1	2	0	1	1	2	2	1	2	2	1				
Result description	0	2	1	2	1	0	2	3	3	2	3	3	2				
Observation details	1	1	1	2	1	0	0	1	1	0	1	1	0		0	1	
Observation result	0	2	1	2	1	0	2	3	3	2	3	3	2		0	1	
Reporter	1	2	0	2	0	1	0	1	0	0	1	0	0				
Course of hospitalisation - Synthesis	2	0	3	2	4	0	3	5	5	3	5	5	3				
Problem synthesis	0	1	2	1	2	0	2	3	3	2	3	3	2				
Clinical reasoning	1	0	2	1	2	0	1	2	2	1	2	2	1				
Discharge details - Objective findings	0	1	4	24	10	1	6	13	13	6	13	13	6				
Anthropometric result description	2	2	1	4	1	0	1	2	2	1	2	2	1				
Anthropometric observation details	3	1	1	4	1	0	0	1	1	0	1	1	0		1	0	SNOMED CT
Anthropometric observation result	3	1	1	4	1	0	1	2	2	1	2	2	1		1	0	UCUM
Vital signs result description	2	2	1	3	1	1	1	2	2	1	2	2	1				

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Vital signs observation details	3	1	1	3	2	0	0	1	1	0	1	1	0		2	0	SNOMED CT; LOINC
Vital signs observation result	3	1	1	3	2	0	1	2	2	1	2	2	1		2	0	UCUM
Physical examination observation note	1	3	1	3	2	0	2	3	3	2	3	3	2				
Discharge details - Functional status	0	1	4	17	3	0	4	12	9	8	12	9	8				
Description	1	3	1	4	1	0	2	4	4	3	4	4	3				
Onset Date	1	4	0	4	1	0	1	3	2	2	3	2	2				
Functional assessment description	1	2	2	4	1	0	0	2	1	1	2	1	1				
Functional assessment result	1	2	2	5	0	0	1	3	2	2	3	2	2				
Care plan - Care plan	0	2	3	29	14	2	14	32	23	14	32	23	22				
Title	2	1	2	4	1	0	1	3	2	1	3	2	2				
Addresses	2	2	1	4	0	1	1	3	2	1	3	2	2				
Description	1	2	2	3	2	0	2	4	3	2	4	3	3				
Plan Period	0	3	2	2	2	1	3	5	4	3	5	4	4				
Other details	1	3	1	4	1	0	1	3	2	1	3	2	2				
Activity	0	3	2	2	3	0	3	5	4	2	5	4	3				
Kind	2	2	1	4	1	0	0	2	1	1	2	1	1				
Activity description	1	1	3	3	2	0	1	3	2	1	3	2	2				
Specific attributes	1	2	2	3	2	0	2	4	3	2	4	3	3				
Care plan - Medication summary	0	1	4	28	7	20	23	42	35	23	42	36	31				
Medication reason	1	1	3	4	1	0	1	3	3	1	3	3	2		0	1	
Reason for change	1	1	3	4	1	0	1	3	2	1	3	3	2		0	1	
Code	1	1	3	2	1	2	1	3	2	1	3	2	2	CHNM; ATC	1	0	IDMP
Brand name	3	0	2	2	1	2	1	2	2	0	2	2	1				
Active ingredient list	0	0	5	2	0	3	3	5	3	3	5	3	4	ATC (IDMP / EMA SPOR SMS); ATC (IDMP / EMA SPOR SMS); ATC (IDMP / EMA SPOR SMS)	0	0	
Strength	0	1	4	2	0	3	3	5	4	3	5	4	4	UCUM; Internal Cod; Local	0	0	
Pharmaceutical dose form	0	0	5	2	0	3	3	5	5	3	5	5	4	Internal Cod; Local; internal voc	0	0	
Dosage Regimen	0	1	4	2	1	2	3	5	4	3	5	4	4	Internal Cod; text	0	1	
Route of administration	0	1	4	2	1	2	3	4	4	3	4	4	3	Internal Cod; internal voc	0	1	

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Period of treatment	0	1	4	2	1	2	3	4	4	3	4	4	3	Internal Cod; internal voc	0	1	
Days supplied	2	1	2	4	0	1	1	3	2	2	3	2	2	Internal Cod	0	0	
Other recommendations	1	2	2	1	3	0	2	3	3	3	3	3	3				

Original Clinical Document								
Original Clinical Document		National Exchange				International Exchange		
No	Yes	Inside my hospital	Between healthcare facilities	To patient	To National Contact Point	Between healthcare facilities	To patient	Between National Contact Points
4	1	0	0	0	0	1	1	0