nphies

Implementation Guide

Insurance Services

TMB Version | 1.2.873

17 March 2022

Version 1.11.6

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The Council of Cooperative Health Insurance
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DOCUMENT RELEASE NOTE

REVISION HISTORY			
Document Version Number	**Date of Release**	**Details of Changes**	**Section No.(s)**
1.0	27-Aug-20	Created the first version to be published.	All Sections applicable
1.1	13-Sep-20	1. Updated Message Structure Definitions for all the profiles 2. Updated Sample Header Message, Message Structure of Bundle, Header Request, Header Response 3. Added a new section: Endpoint Operation 4. Added a new section: Scenarios	Sections: 6.2.1 6.2.2 6.2.7 6.2.8 6.2.9 6.2.10 8 9
1.2	15-Oct-20	1. Added Abbreviations in the document 2. Inserted Page Numbers in the footer 3. Updated FHIR Bundle Resource Hierarchical Structure 4. Updated Information Flow with addition of Asynchronous Polling, Queue Management 5. Updated Message Structure Tables 6. Updated Table of Extensions	Sections: 6.2.4 6.2.5 6.2.6 6.3.0 6.3.1 6.3.2 6.3.3 6.3.4 9.1.1 9.2.1 9.3.1 9.4.1 9.5.1 9.6.1 9.7.1 9.8.1 9.9.1 9.10.1 9.11.1 9.12.1

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1.3	18-Nov-20	1. Updated Abbreviations in the document 2. Added Message Structure Definition Section in Information Flow 3. Moved Transactions Using the Task Resource 4. Updated Message Structure: Bundle 5. Updated Message Structure: Header Request 6. Updated Message Structure: Header Response 7. Updated Information Flow with addition of NPHIES Messaging Mechanism, update Polling, Methods to Reduce Polling Requests, Resource Instance Example 8. Added new section Identify Code Lists 9. Cross Referenced the use case links in Scenarios 10. Updated Cardinality for CoverageEligibilityRequest.purpose 11. Updated ValueSet for CoverageEligibilityResponse.extension.notInForceReason 12. Updated cardinality for CoverageEligibilityResponse.purpose 13. Updated ValueSet for claim.supportingInfo.category for Auth and Claim Profiles 14. Updated ValueSet for Claim.item.bodySite in Auth and Claim profiles 15. Updated ValueSet for Claim.diagnosis.onAdmission in Auth and Claim Profiles 16. Added ValueSet for Claim.supportingInfo.code (vision claim) in Auth and Claim profiles 17. Added new field Claim.item.extension.payerShare in Auth and Claim Profiles 18. Updated Cardinality for claim.item.extension.patientShare in Claim profiles 19. Updated ValueSet for ClaimResponse.extension.reissue-reason in Claim Response profile 20. Updated ValueSet for Communication Request.reasonCode 21. Updated ValueSet for Communication.reasonCode 22. Updated ValueSet for Task.reasonCode 23. Updated ValueSet for ClaimResponse.outcome	Sections: 6.2.1 6.2.9 6.2.11 6.2.12 6.2.12.1 6.2.13 6.2.13.1 6.3 6.3.7 8.2 9.1.1.1 9.2.1.1 9.3.1.1 9.3.1.2 9.3.1.3 9.3.1.4 9.3.1.5 9.4.1.1 9.5.1.1 9.5.1.2 9.5.1.3 9.5.1.4 9.5.1.5 9.6.1.1 9.7.1.1 9.8.1.1 9.10.1.1 9.1.1.2 9.2.1.2 9.3.1.6 9.4.1.2 9.5.1.6 9.6.1.2 9.7.1.2

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1.4	11-Dec-20	1. Updated the Provider and Insurer fields' descriptions in message structure fields 2. Added a point in Important Note: Provider and Payer Licenses can be referenced in the Community Portal: Health Dictionary (HD) → Code Lists → Essential Lists	Sections: 9.1.1.1 9.2.1.1 9.3.1.1 9.3.1.2 9.3.1.4 9.3.1.5 9.5.1.1 9.5.1.2 9.5.1.4 9.5.1.5 9.11.1.1 9.12.1.1 9.13.1.1 9.21
1.5	10-Jan-21	1. Updated FHIR datatypes description 2. Added a Section: Note for Implementers 3. Added a summary paragraph in Section 5 4. Updated Output of Process Message 5. Updated Message Events 6. Updated List of Message Events, Transactions and Focal Resources 7. Updated Information Flow 8. Added a section: Message Exchange Cycle in Information Flow 9. Added a Section: Error Handling in Information Flow 10. Updated NPHIES Messaging Mechanism with Message initiated by HIC, HCP 11. Added References in the Scenarios Section	Sections: 3.1 3.3 5 6.2.2.2 6.2.7 6.2.8 6.3 6.3.1 6.3.2 6.3.5.1 6.3.5.2 8 9

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		12. Removed Message Structure Definition Tables, Datatype References 13. Updated the description for Data Model section	
1.6	31-Jan-21	1. Updated the Process Message URL 2. Updated Error Handling 3. Updated Polling 4. Updated NPHIES Messaging Mechanism 5. Updated Methods to Reduce Polling Requests 6. Added Message Transmission 7. Updated Important Notes before Support Information	Sections: 6.2.2 6.3.2 6.3.4 6.3.5 6.3.7 6.4 9.21
1.7	21-Feb-21	1. Added a new section: Max Length 2. Updated Note for Implementers 3. Updated HIC and NPHIES Error Handling 4. Updated Task Input Type Table 5. Added Profile Release Note after Document Release Note	Sections: 3.3 3.4 6.3.2.2 6.3.2.3 6.3.4.1
1.7.1	28-Feb-21	1. Updated the Profile Release note after Document Release Note	N/A
1.8	23-Mar-21	1. Updated the Profile Release note 2. Updated Note to Implementers 3. Added Task Usage 4. BRVR Updated Version 1.2 has been released	Sections: 3.4 9.19.1.1 N/A for BRVR
1.8.1	24-Mar-21	1. Added Datatype Guidance 2. Moved Note for Implementers 3. Updated Task Usage Table	Sections: 3.4 3.5 9.19.1.1
1.9	2-May-21	1. Updated Profile Release Note 2. Updated Note to Implementers 3. Added Pre-Auth Use Case Scenarios 4. Added Coverage Resource Details	Sections: 3.5 7.4.1 9.10
1.9.1	6-May-21	1. Updated Profile Release Note	Sections: N/A
1.10	21-Jun-21	1. Updated Note to Implementers 2. Added Section on Special Handling for Elements 3. Renamed Batch Item to Batch Number in Table of Extensions 4. Updated Polling 5. Updated Profile Release Note	Sections: 3.5 6.3.10 6.2.6 6.3.4
1.10.1	29-Jun-21	1. Updated FHIR DataTypes (Attachment) in alignment with Attachment DataType section 3.4.1	3.1

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1.10.2	29-Jun-21	1. Updated Profile Release Note	N/A
1.11	30-Nov-21	1. Updated Note for Implementers 2. Removed the Advanced Authorization Use 3. Added section Patient Referral use case 4. Renamed Pre-Authorization to Authorization across the document 5. Updated Profile Release Note	Sections: 3.5 7.3 7.3.1
1.11.1	29-Dec-21	1. Updated the “Prior Authorization” use case in the Authorization Examples table. 2. Removed the “Extending an existing Prior Authorization” use case in the Authorization Examples table.	Sections: 7.3.2
1.11.2	17-Jan-22	1. Updated Profile Release Note	N/A
1.11.3	20-Jan-22	1. Updated Profile Release Note 2. Updated Table of Extensions 3. Updated Note to Implementers 4. Added section Newborn Eligibility Authorization Claims 5. Added section Patient Policy Discovery	Sections: N/A 6.2.6 3.5 6.5 6.6
1.11.4	15-Feb-22	1. Updated Profile Release Note	Sections: N/A
1.11.5	24-Feb-22	1. Updated Category Codes and Supporting Info 2. Updated Profile Release Note	Sections: 6.3.10.2 N/A
1.11.6	17-Mar-22	1. Updated Profile Release Note	Sections: N/A

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PROFILE RELEASE NOTE

Update Version	Date	Update Description
3.2	16-2-2020	Added .meta fields in all the profiles
3.2	16-2-2020	Added structure definition table for all the resources
3.2	16-2-2020	Updated the structure definition to include the profile version "|.1.0.0"
3.2	16-2-2020	Added OperationOutcome profile
3.2	16-2-2020	Added Error Notice profile
3.2	16-2-2020	Added error.extension.expression to all business responses (Eligibility Response, Claim Response, Authorization Response, Task)
3.2	16-2-2020	Removed Location.name from the location profile
3.2	25-2-2021	Added a column to indicate if the field is an array or not, as per the FHIR standards
3.2	25-2-2021	Added the .extension parent element within the resources to indicate that the extension element is an array
3.2	25-2-2021	Added element resourceType to all resources
3.2	25-2-2021	Updated description for missing elements
3.2	25-2-2021	Added the structure definition for all extensions in the comments column
3.2	25-2-2021	Created a consolidated list of profiles highlighted in dark yellow. This should help in faster update and easier navigating to resources through filtering the left most column
3.4	21-03-21	Removed the business version number from the extension structure definitions in the [structure definition-profile V1 and reflected the update on the comment section in all the related extension elements within the profiles.
3.4	21-03-21	Updated the extension naming from extension-original-request/response to extension-original-request/response. And reflected the same on all profiles.
3.4	21-03-21	Updated the dataType for the extension elements (Changed it from "Element" to "Extension") in line with the FHIR standards
3.4	21-03-21	Updated the Meta field Array description from being an array to Not an Array
3.4	21-03-21	Updated the description of the Task.intent element (Distinguishes whether the task is a proposal, plan, or full order.)
3.4	21-03-21	Updated the comment section for all items that must use a fixed value to include the (Must use the fixed value) phrase
3.4	21-03-21	Added the value set with the condition to the task.output.value element. if Task.output.type="error" then Task.output.value

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Update Version	Date	Update Description
		must be a valueCodeableConcept with a code selected from http://Nphies.sa/terminology/ValueSet/adjudication-error
3.4	21-03-21	Updated ClaimResponse.extension.adjudication-outcome to optional as it will not be necessary in the business responses generated by Nphies or HICs where the Claim.outcome elements is ‘queued’, ‘partial’ or ‘error’. The field is still needed in the HIC responses when Claim.outcome element is ‘complete’, which will be managed through a BRVR.
3.4	21-03-21	Updated the comment on the MessageHeader.meta.tag element to explain that it can be used for indicating if the message is Generated by Nphies, or if there are any queued messages for the HCP to go and poll. using the valueSet (http://Nphies.sa/terminology/CodeSystem/meta-tags) and possible values "queued-messages", "Nphies-generated"
3.4	21-03-21	Updated .extension element max cardinality to * to comply with FHIR standards
3.4	21-03-21	Updated cardinality for the extension.expression from 0..* to 0..1
3.4	21-03-21	added OperationOutcome profile (structure definition) to the [structure definition-profile] sheet
3.4	21-03-21	added task.usage table within the Task sheet to explain the different uses of this profile
3.4	21-03-21	Updated attachment description in Data Types Sheet to include more clarity on the elements usage
3.5	30-03-21	updated the reference elements to indicate the Nphies defined Nphies profiles
3.6	04-04-21	Add the Claim.careTeam.qualification field in authorization institutional, professional, vision and dental
3.6	04-04-21	Add the Claim.careTeam.qualification field in claim institutional, professional, vision and dental
3.6	25-04-21	Add the Claim.careTeam.qualification field in practitioner Profile
3.6	25-04-21	Add the policy holder field in the coverage profile
3.6	25-04-21	Add organization profile for policy holder
3.6	25-04-21	Update the data type reference for Claim.extension.eligibilityResponse from ref.1 to Ref.3a Use .business identifier instead of Use .reference to the full URL of the included resource
3.6	25-04-21	Add an extension in the claim profile for priorauth Response : Claim.extension.priorauthResponse in the 5 types(institutional, dental, vision, professional and pharmacy) with cardinality 0..1
3.6	25-04-21	Add a data structure for the priorauthResponse extension
3.6	25-04-21	Change PaymentReconciliation.detail.request - cardinality needs to change from 1..1 to 0..1

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3.6	26-04-21	Change PaymentReconciliation.detail.response - cardinality needs to change from 1..1 to 0..1
3.6	27-04-21	Updated the data structure for the field datetime
3.6	27-04-21	Include the definition for the "instant" to the dataType sheet in the profiles
3.6	27-04-21	Update the data type reference for the payment reconciliation profile
3.6	27-04-21	Update the structure definition
3.6	27-04-21	Change PractitionerRole.code cardinality to be optional(0-1)
3.6	27-04-21	Change PractitionerRole.speciality cardinality to be optional(0-1)
3.7	06-05-21	Breakdown the patient.identifier.type in the patient profile
3.7	06-05-21	Remove the preAuthRef field from claim response
3.7	06-05-21	Add back the preAuthRef field from authorization response
3.7	06-05-21	Add the auth period in authorization response
3.7	06-05-21	Change PaymentNotice.recipient data type to ref.2a only instead to ref.2a and ref1
3.7	06-05-21	Change the cardinality of the Claim.item.careTeamSequence from 1..1 to 1..*
3.8	19-05-21	Add the word{error} to the CoverageEligibilityResponse.error.extension
3.8	19-05-21	Update the description of the field CoverageEligibilityResponse.error.extension.expression
3.9	20-05-21	Update the binding URL for coding element in extension-adjudication-reissue in claimResponse and authorization response
3.9	20-05-21	Updated the typo in the data structure from Batch-item to batch-number
3.9	25-05-21	Add back the coverage.period to the coverage profile
3.9	25-05-21	Add the Claim.extension.eligibilityOffLine field in the 5 types of the authorization (institutional, professional, vision, dental and pharmacy)
3.9	25-05-21	Add the Claim.extension.eligibilityOffLineDate field in the 5 types of the authorization (institutional, professional, vision, dental and pharmacy)
3.9	25-05-21	Add the Claim.extension.eligibilityResponse in the 5 types of the authorization (institutional, professional, vision, dental and pharmacy)
3.9	25-05-21	Add the Patient.identifier.extension.country field in the patient coverage
3.9	25-05-21	Change the cardinality of the ClaimResponse.item.detail.adjudication.amount and

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		ClaimResponse.item.detail.adjudication.amount and ClaimResponse.item.detail.subDetail.adjudication.amount to 0-1 instead of 1-1 in the claim response and authorization response
3.9	25-05-21	Add new Sheet including all the supporting info structure and validation
3.9	09-06-21	Update Organization.identifier
3.9	22-06-21	Change the data type for Bundle.timestamp from datetime to instant
4	23-06-21	Update in structure definition-profile from batch-item to batch-number
4	23-06-21	Update in 5 types of the claims profile the batch-item to batch-number
4	23-06-21	Task.focus ref 3b instead of Ref1
4	07-07-21	Update the Task.output.value[x] for cancel response and Check-StatusResponse
4.1	27-05-21	Add new data type Ref4 in Data type sheet
4.1	27-05-21	use the Ref4 in the field VisionPrescription.prescriber
4.1	07-06-21	Add a field Task.statusreason (task profiles)
4.1	16-06-21	Change the cardinality of the Claim.item.careTeamSequence from 1-1 to 1-*
4.1	23-06-21	Add PaymentReconciliation.detail.extension.component-payment
4.1	23-06-21	Add PaymentReconciliation.detail.extension.component-early-fee
4.1	23-06-21	Add PaymentReconciliation.detail.extension.component-nphies-fee
4.1	28-06-21	Update the data type in MessageHeader.response.details to accept only ref1 In stead of ref1 and ref2a
4.1	11-07-21	Change the cardinality of the communication.payload choice elements from 1-1 to 0-1
4.1	14-07-21	Update in the structure definition the operation outcome to lower case.
4.1	25-07-21	put the value set in front of the correct field: http://hl7.org/fhir/ValueSet/coverage-financial-exception
4.2	25-07-21	remove the payment element from the claim response profile: ClaimResponse.payment
4.3	05-08-21	Update a typo Claim.accident.locationAddress in in claims and authorization
4.4	08-08-21	Update the Organization Payer & Provider identifier description
4.4	08-08-21	Update the organization policy holder identifier data type to Identifier a

Update Version	Date	Update Description
4.5	16-08-21	Update the value set for type institutional (claim and authorization)
4.5	16-08-21	Update the value set in Task profile for the check status response from http://hl7.org/fhir/ValueSet/remittance-outcome to http://nphies.sa/terminology/ValueSet/claim-response-outcome
4.6	16-08-21	Update the cardinality of Bundle.entry from 1-1 to 1-*
4.6	16-08-21	Remove the fields from the bundles: Bundle.entry.focal-resource,Bundle.entry. Other resource #1, Bundle.entry. Other resource #2
4.6	16-08-21	Update the fields name in the policy holder organization : Organization.identifier.type.coding.system, Organization.identifier.type.coding.code
4.6	16-08-21	Update the cardinality from 0-1 to 1-1 of Organization.identifier.type.coding.code
4.6	16-08-21	Put the value set in front of the correct field: http://nphies.sa/terminology/valueSet/policyholder-identifiertype
4.7	30.11.21	Claim.item.servicedPeriod updated field description
4.7	30.11.21	Claim.item.servicedPeriod updated the comment
4.7	30.11.21	Claim.supportingInfo.timingPeriod: updated comment
4.7	30.11.21	Add Claim.extension.transfer Authorization only (structure definition added)
4.7	30.11.21	Add CoverageEligibilityRequest.extension.transfer
4.7	13.12.21	Added Claim.insurance.preAuthRef in all authorization types
4.7.3	17.01.22	Added New Data type CodeableConcept 1
4.7.3	17.01.22	Update CodeableConcept
4.7.3	17.01.22	Revise the data type for the field Claim.supportingInfo.code to CodeableConcept 1
4.7.3	17.01.22	Adding validations on supporitng info categories
4.7.4	18.01.22	Adding a new field for episode of care in 5 types of claims
4.7.4	18.01.22	Adding new field for newborn in eligibility
4.7.4	18.01.22	Adding new field for newborn in 5 types of claims
4.7.4	18.01.22	Adding new field for newborn in 5 types of authorization
4.7.4	18.01.22	Adding new field invoice number in all claim types and claim response
4.7.4	18.01.22	Add the URL for 4.7.4 extensions in the data structure
4.7.4	18.01.22	Remove the version for all the extensions in the data structure
4.7.5	15.02.22	Add supporting info category

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4.7.5	15.02.22	Revise the value set for the Task.oputput revised form: http://hl7.org/fhir/ValueSet/remittance-outcome to: http://nphies.sa/terminology/ValueSet/claim-response-outcome
4.7.5	15.02.22	Remove ResourceType row from all the resources
4.7.6	24.02.22	Adding new field for siteeligibility in CoverageEligibilityResponse.extension.siteEligibility & CoverageEligibilityResponse.insurance.extension.siteEligibility
4.7.7	17.03.22	Changed cardinality for ClaimResponse.item.extension.patientInvoice from 1..1 to 0..1

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ABBREVIATIONS

Abbrev.	Description
ACHI	Australian Classification of Health Interventions
API	Application Programming Interface
AM	Account Management Component of Solution Architecture
APM	Application Performance Monitoring
BAM	Business Activity Monitoring
BI	Business Intelligence
CCHI	Council of Cooperative Health Insurance
CDA	Clinical Document Architecture
COTS	Commercial Off the Shelf
CPT	Current Procedural Terminology
CR	Change Request
CRUD	Create, Read, Update, Delete
DC	Data Center
DNS	Domain Name System
EFWA	Errors, Fraud, Waste & Abuse
ESB	Enterprise Service Bus
ETL	Extraction, Transformation, and Loading
EULA	End User License Agreement
FHIR	Fast Healthcare Interoperability Resources
FS	Financial Services
FTP	File Transfer Protocol
HCP	Healthcare Provider
HIC	Health Insurance Company
HIPAA	Health Insurance Portability and Accountability Act
HIS	Hospital Information System
HL7	Health Level – 7
HTTP	Hypertext Transfer Protocol
IAM	Identity and Access Management
ICD	International Classification of Diseases
JSON	JavaScript Object Notation
KPI	Key Performance Indicator
LDAP	Lightweight Directory Access Protocol

LOINC	Logical Observation Identifiers Names and Codes
MOH	Ministry of Health
NHIC	National Health Information Center
NPHIES	National Platform for Healthcare Information Exchange Services
OLA	Operations Level Agreement
PrTM	Providers Transaction Management Module
PaTM	Payers Transaction Management Module
PM	Project Manager
PMO	Project Management Office
SMTP	Simple Mail Transfer Protocol
QA	Quality Assurance
RAC	Real Application Clusters
REST	Representational State Transfer
RFP	Request for Proposal
RPO	Recovery Point Objective
RTP	Recovery Time Objective
SeHE	Saudi eHealth Exchange
SHIB	Saudi Health Insurance Bus
SLA	Service Level Agreement
SOA	Service-Oriented Architecture
SOP	Standard Operating Procedures
SSO	Single Sign-On
TMB	Transaction Management Bus
TPA	Third-Party Administrators
UAT	User Acceptance Testing
UniPlat	Unified Platform for Health Insurance Transactions and Electronic Health Data Exchange
WSI	Web Services Integration
XML	Extensible Markup Language

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1 ABSTRACT

Health Level-7 or HL7 refers to a set of international standards for the exchange of clinical, financial, and administrative data between software applications used by various healthcare providers. HL7 specifies a few flexible standards, guidelines, and methodologies by which various healthcare systems can communicate with each other. Such guidelines or data standards are a set of rules that allow information to be shared and processed in a uniform and consistent manner.

Fast Healthcare Interoperability Resources (FHIR) is a new standards family from HL7 International designed to be easier to implement, more open, and more extensible than other standards families from HL7 or other Standards Development Organizations (SDO). The FHIR leverages a modern web-based suite of API technology, including topic-based content models (resources), methodology for composing larger information sets from resources (bundles of resources as collections, documents, messages etc.), HTTP-based RESTful protocols for information object exchange, and a choice of JSON or XML for data representation.

2 OBJECTIVE

The objective of Implementation guide is to enable external payers and providers to integrate with NPHIES. The guide describes the references, overview of NPHIES, information exchange construction and flow between different healthcare stakeholders and NPHIES, use cases, defines the profiles' message structure for FHIR implementation, and specifies the links to relevant FHIR artifacts and documentation.

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3 REFERENCES

FHIR is a healthcare information exchange standard that makes use of an HL7-defined set of resources to support information sharing by a variety of means, including documents, messages, services, and RESTful interfaces. Thus, FHIR is suitable for use in a wide variety of contexts - cloud communications, server communication in large institutional healthcare providers, and much more.

FHIR defines resources for clinical, financial and administrative content (e.g. Patient, Location, Organization, Claims, Tasks, etc.) as well as resources for infrastructure purposes. FHIR resources are small reusable structures where each resource has a logical table, and XML or JSON template. To exploit the FHIR standard for the Financial Services project, resources will be first represented using the data elements that are followed by their types and cardinalities. Thus, it is important to understand the concept of datatypes.

3.1 FHIR DataTypes

The FHIR specification defines a set of datatypes that are used for the resource elements. In general, datatypes are categorized into two groups:

a. Primitive types which are single elements
b. Complex types which are re-usable clusters of elements which may be further classified in General Purpose, metadata and special purpose datatypes
Note: HL7 FHIR Datatypes are defined in https://www.hl7.org/fhir/datatypes.html

Commonly used datatypes are summarized below. Note that some lesser used sub-elements have been omitted from some complex elements, see the above noted FHIR datatypes section for a complete list of datatypes including sub-elements:

Datatypes: FHIR name	Field Structure	Description
id	set of numbers and letters up to 64 characters	N/A
Ref.1	.reference: FullUrl	reference using the full url where the reference resource will be included within the bundle
Ref.2a	• .type (uri) (optional) • .identifier (Mandatory) • type (CodeableConcept) (Mandatory identifier is for provider, payer, practitioner…) • system (uri) (Mandatory) • value (string) (Mandatory)	It is used when providing well known identifiers rather than including a resource when there is only one valid resource type. It is used to reference a known identifier for clearly stated resource. Identifier captured within NPHIES registries Example: reference (Organization)
Ref.2b	• .type (uri) (Mandatory) (supplied as there is a choice of resources) • .identifier (Mandatory)	It is used when providing well known identifiers rather than including a resource when there is a choice of resource types. It is used to reference a known identifier for a choice of

	• type (CodeableConcept) (Mandatory) (identifier is for, provider, payer, practitioner) • system (uri) (Mandatory) • value (string) (Mandatory)	resources. Identifier captured within NPHIES registries. Example: Reference(Organization | Practitioner)
Ref.3a	• .type (uri) (optional) • .identifier (Mandatory) • type (optional) • system (uri) (Mandatory) • value (string) (Mandatory)	It is used when providing the business identifier for a resource. (claim, eligibility, prescription, referral,) when there is only one valid resource type. It is used to reference a business identifier for clearly stated resource. Example: reference (Claim)
Ref.3b	• .type (uri) (Mandatory) (supplied as there is a choice of resources) • .identifier (Mandatory) • type (optional) • system (uri) (Mandatory) • value (string) (Mandatory)	It is used when providing the business identifier for a resource. (claim, eligibility, prescription, referral...) when there is a choice of resource types. It is used to reference a business identifier for a choice of resources. Example: Reference(Claim | eligibilityRequest)
Identifier.a	• identifier • type (CodeableConcept) (optional) • system (uri) (Mandatory) • value (string) (Mandatory)	Used to list the business identifier of the resource. Example (resource): claim
Identifier.b	• identifier • type (CodeableConcept) (Mandatory) (as used for patient, provider, payer, etc.…) • system (uri) (Mandatory) • value (string) (Mandatory)	A business unique identifier to identify a well-known entity based on the identification standards adopted by NPHIES Example: Patient. Identifier (Iqama or Saudi Health ID).
positiveInt	whole number > 0	N/A
code	String	N/A
Coding	• system (Mandatory) • code (Mandatory) • display	N/A
string	String	N/A
Date	YYYY-MM-DD	N/A
dateTime	YYYY-MM-DDThh: mm: ss+zz: zz	N/A
BackboneElement	Array element	N/A

CodeableConcept	an array of coding system (uri) (Mandatory) code (code) (Mandatory)	N/A
Period	start (dateTime) end (dateTime)	N/A
boolean	true or false	N/A
Quantity 1	• value (decimal) (Mandatory) • comparator (code) (optional) unit can be specified as .unit or .system and .code, but not both • unit (string) (optional) • system (uri) (optional) • code (code) (optional)	Used to identify a quantity value only
Quantity 2	• value (decimal) (Mandatory) • comparator (code) (optional) unit can be specified as code • system (uri) (Mandatory) (if used in day supply field in pharmacy claim) • code (code) (Mandatory) (if used in day supply field in pharmacy claim)	Used to identify a quantity value and the additional mandatory attributes Example: Claim.item.productOrService (medication quantity)
Money	• value (decimal) (Mandatory) • currency (code) (Mandatory)	N/A
decimal	number containing decimals	N/A
Address	• use (code) • type (code) • text (string) (Mandatory) • line (array of string) • city (string) • district (string) • state (string) • postalCode (string) • country (string) • period (period)	text required BRVR at least one element from address text or combination of another element
Human Name	• use (code) • text (string) (Mandatory) • family (string) • given (array of string) • prefix (array of string) • suffix (array of string)	text required

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	• period (period)	
Attachment	• contentType (code) (Mandatory) • language (code) (Optional) • data (base64Binary) (Mandatory if no url) • url (Mandatory if no data) • size (unsignedInt) (Mandatory if url) • hash (base64Binary) (Mandatory if url) • title (string) (Mandatory) • creation (dateTime) (Mandatory)	Either .url must be supplied pointing to the attachment contents or .data must be supplied containing the attachment data
Choice	Example[x] string | date | reference(Patient) either: exampleString (string) or exampleDate (date) or exampleReference(Patient)	N/A
uri	various types, e.g. "Patient" "urn: uuid: 125371…" "urn: oid: 2.14.113344.2.15.12349876"	N/A
url	various types, e.g. "http: //somewhere.com/…/Resource/id" "mailto: name@domain.com" "urn: oid: 2.14.113344.2.15.12349876"	N/A
Annotation	author[x] string | Reference (Practitioner | Patient | RelatedPerson | Organization) time (dateTime) text (markdown)	N/A

Table 1: FHIR Datatypes

3.2 Cardinality

Cardinality Value	Description

0..1	No instance or just one (optional, but no more than one)
0..*	Zero or more instances (optional, and any number of instances is allowed)
1..1	Mandatory with exactly one instance
1..*	Mandatory with at least one instance

Table 2: Cardinality

3.3 Max Length

Max Length indicates the maximum length in characters that is permitted to be present in conformant instances and expected to be supported by conformant consumers that support the element. NPHIES blocks/rejects with an error message transactions which violate the max length.

3.3.1 Max Length for All Datatypes

The table below specifies the datatype of elements and their max length in English characters and Arabic characters:

Datatype	Length Characters (EN)	Length Characters (AR)
boolean	5	
integer	12	
string	*	*
decimal	30	
uri, url, Canonical	255	
base64Binary	10MB	10MB
instant	29	
date	10	
dateTime	29	
time	8	
code	30	
oid	60	
id	64	
markdown	10MB	10MB
unsignedInt	11	
positiveInt	11	
uuid	45	
Attachment.title	250	125
Identifier.value	50	
Annotation.authorString	100	50
CodeableConcept.text	250	

Coding.version	100	
Coding.display	100	
Quantity.unit	40	
SamplesData.data	30	
HumanName.text	250	125
HumanName.family	100	50
HumanName.given	100	50
HumanName.prefix	100	50
HumanName.suffix	100	50
ContactPoint.value	100	
Address.text	500	250
Address.line	200	100
Address.city	200	100
Address.district	200	100
Address.state	200	100
Address.postalCode	50	
Address.country	100	50
ContactDetail.name	250	125
Contributor.name	250	125
RelatedArtifact.label	100	50
RelatedArtifact.display	250	125
RelatedArtifact.citation	1000	500
ParameterDefinition.max	10	
ParameterDefinition.documentation	500	250
Expression.description	1000	
Expression.expression	1000	
TriggerDefinition.name	100	
Reference.reference	250	
Reference.display	200	
Dosage.text	4000	2000
Dosage.patientInstruction	4000	2000

Table 3: Max Length for All Datatypes

* *Max length defined in separate table for string fields*

3.3.2 Max Length for String Fields

The table below specifies the fields with ‘String’ datatype and their max length in English characters and Arabic characters:

Fields with String Datatype	Characters (EN)	Characters (AR)
Task.description	2000	
CoverageEligibilityResponse.disposition	250	125
CoverageEligibilityResponse.insurance.item.name	100	50
CoverageEligibilityResponse.insurance.item.description	250	125
CoverageEligibilityResponse.insurance.item.benefit.allowedString	60	
CoverageEligibilityResponse.insurance.item.benefit.usedString	60	
CoverageEligibilityResponse.preAuthRef	40	
Claim.supportingInfo.valueString	250	125
ClaimResponse.disposition	250	
ClaimResponse.processNote.text	2000	1000
CommunicationRequest.note.authorString	100	50
Communication.payload.contentString	*	*
Communication.note.authorString	100	50
coverage.dependent	10	
coverage.class.value	30	
coverage.class.name	100	
coverage.network	30	
Organization.name	250	125
PaymentReconciliation.disposition	250	
Location.name	250	125

Table 4: Max Length for String Fields

Refer to the links below:

- https://hl7.org/fhir/R4/elementdefinition-definitions.html#ElementDefinition.maxLength
- https://hl7.org/fhir/R4/elementdefinition.html

3.4 Datatype Guidance

3.4.1 Attachment DataType

Attachment (format and size) is given below:

1. **contentType** (code) (required): mimetype (application/pdf, image/jpeg)

Extension	Kind of Document	MIME Type
.pdf	Adobe Portable Document Format (PDF)	application/pdf
.jpeg .jpg	JPEG images	image/jpeg

2. **language** (code) (Optional):

    - en: English
    - ar: Arabic

3. **data** (base64Binary) (is required if no url is provided): the attachment to be Base64 encoded and placed in this element.

4. **url** (url)(is required if no data is provided)This is the location of the attachment content

5. **size** (unsignedInt) (required if an url is provided): Number of bytes of content (if url provided)

6. **hash** (base64Binary) (required if an url is provided) : Hash of the data (sha-1, base64ed)

7. **title** (string) (required): Label to display in place of the data, or the name of the file

8. **creation** (dateTime) (required): Date attachment content was first created

3.5 Note for Implementers

- If the element in a resource or datatype, is of an array type then even if the profile reduces the cardinality from 0..* or 1..* to 0..1 or 1..1, it still needs to be represented in the JSON as an array, with the square brackets (“[ ]”).

- Enforcement of including the profile version number, e.g. adding "|1.0.0" to the end of the name of the profile, will be included in a future update so that version management can be implemented for profiles.

  Implementers can correct their systems in advance of the update being deployed and will not receive any errors for doing this correctly. Once the update is applied any messages that do not handle this correctly will be rejected by NPHIES with an error code to indicate the problem.

- Data elements in FHIR are never empty or null, and will always contain a value or an extension. If the optional field doesn’t have a value, then the field shouldn’t be included.

- Refer to http://hl7.org/fhir/R4 for the FHIR R4 specification. This Implementation Guide assumes an understanding of the FHIR R4 specification and we will generally not repeat material already contained in the FHIR R4 specification unless it is to highlight a point or to provide a localization.

- This Implementation Guide also uses and assumes an understanding of common web technologies such as UTF-8, HTTP, XML, JSON, PKI-X509.

- Provider and Payer Licenses can be referenced in the Community Portal (https://cportal.NPHIES.sa/): Health Dictionary (HD) → Code Lists → Essential Lists
- The links mentioned in the document should be considered for reference and might change later for actual implementation.
- Some profiles/ resources might be available for integration at a later phase.
- Versioning if using KSA profile:
    1. If it is KSA profile, you need to use the name of the profile along with the profile business version (for example "|1.2.3")
    2. If it is a base FHIR profile, then you just need to include the name of the profile. Recommend the profile name which include the FHIR version number example: "http://hl7.org/fhir/4.0/StructureDefinition/Observation"
- Shadow Billing Rules are mentioned here:
    1. If item or detail or sub detail, if there are no children then net equal ((quantity * unit price) * factor) + tax
        - If factor is missing, the value equals 1
        - If tax is missing, the value equals 0
    2. If item or detail have children, (example: if it got children from a package or glasses prescription)
        - If it is a package, then accept the net value of package without validating the net value on the item details
        - Otherwise, the net on the item should equal to sum of the net on the children
- Business rules (BRVR) - can be expressed as constraints in profiles (part of the structure definition) or invariants (business rule expressions) specified with the profiles.
- Do not re-submit a claim that was accepted within the batch. Don't fix the batch and re-send it, send only a batch of the fixed items.
- The specialty of the careTeam provider goes in the careteam.qualification.
- The Claim, Claim Response support five different values of type element to support the different business practices. The types are:
    - Institutional – In-patient and emergency health services provided typically by Hospitals
    - Professional – Out-patient for healthcare products and services such as medical, rehabilitative, and speech related services that are not covered in Oral, Pharmacy or Vision services mentioned below.

- Oral – Out-patient services for dental, hygiene, and denture services and products
- Pharmacy – Out-patient supply medications and health related products
- Vision – Out-patient supply of eye exam, glasses, contact lens, and other vision services

- When billing the medication codes or any type of Prior-authorization or Claim, the supporting information, or the number of days' supply of the medication SHALL also be provided. This is accomplished by creating supportingInfo element where category code is "days-supply" and the number of days of supply is provided in the valueQuantity element.

Note: Days-supply is not required on Institutional claim line items where the medication is for in-patient services. It is, however, required for any line items for discharged medications provided to the patient.

- Given the all computer systems are not required to synchronize their clocks to a central clock, the current time on computers can vary. This may result, for example, in the creation time of transmitted message which was set to the current time of the sending system to appear to be in the future according to the clock of receiving system. Therefore, it is recommended to allow a buffer time of 15 minutes when comparing times such that "time sent" +- 15 minutes = "Received time".

- In an Authorization Response and Claim Response where .outcome=complete, the adjudication categories 'benefit', 'tax' and 'approved-quantity' must be provided for each .item.

- When to put monetary amount vs value element for adjudication code category, only the approved-quantity uses the value element.

Adjudication Category Code	Element
patientShare	amount
benefit	amount
approved-quantity	value
tax	amount

- The provider may send services for multiple authorizations in one claim and will provide the authorization references in the Claim.insurance.preAuthRef array.

- The provider may send multiple claims for an authorization with each claim identifying the appropriate authorization references in the Claim.insurance.preAuthRef array.

Note: All data elements in the Nphies profile excel spreadsheet are considered "Must Support" data elements which means that the creator of the message must provide data for the element if they have it even if the element is optional (cardinality is "0..") and that receivers of the message cannot reject

the message if the data elements are supplied but may choose to not use in their processing. In the upcoming Web Implementation Guide, presentation of profiles all of the Must Support elements will be marked with Must Support symbol, a red square containing a white 'S'.

- Patient share at Claim level: The claim.item.extension.patientShare is the amount that the HCP has collected from the patient.
- Patient share at Claim Response level: The patient in the adjudication.category is the amount that should be paid by the patient.
- **nphies new extensions**:
    - Patient Invoice – The number of the patient invoice on which the service was billed.
    - Episode of care – The provider specific episode identifier.
    - Site Eligibility – Code to indicate whether the patient is eligible or not eligible and why.
    - Newborn – Flag to identify that this claim is for a newborn. *For more information, refer to Newborn Eligibilty Authorization Claims*

Name	Resource/Element
Episode of care	extension-episode
Newborn	extension-newborn
Patient invoice	extension-PatientInvoice
Site eligibility	extension-siteEligibility

The above extensions will be used by the market complying with the cardinality and the data type mentioned in the profile excel sheet. However the validation by nphies will be implemented later on.

4 SOLUTION OVERVIEW

Nphies is a centralized network and processing system, which will connect all stakeholders to efficiently and effectively manage and monitor the standards-based information exchanges between providers (Hospitals, Clinics, Pharmacies [collectively referred as HCPs]) and payers (Health Insurance Companies (HICs) and TPAs) for the benefit of all stakeholders including the beneficiary.

4.1 Roles Catalog

Sr. No.	Role	Description
1	Department Staff	This role represents the group of employees within CCHI/ Sehati who will interact with NPHIES to conduct their day-to-day operations including accreditation department staff, pre-qualification department staff, in addition to NPHIES department staff.
2	HCP	HCP role represents the HCP staff/ backend systems that will be interacting with the NPHIES to conduct the health insurance business processes (Eligibility, Claims, and Payment Management Services) through NPHIES.
3	HIC	HIC role represents the HIC staff/ backend systems that will be interacting with the NPHIES to conduct the health insurance business processes (Eligibility, Claims, and Payment Management Services) through NPHIES.
4	TPA	TPA role represents the TPA staff/ backend systems that will be interacting with the NPHIES to conduct the health insurance business processes (Eligibility, Claims, and Payment Management Services) through NPHIES. TPAs act on behalf of HICs.
5	NPHIES	NPHIES role represents the electronic platform that will be acting as the integration hub between all stakeholders involved in the health insurance business in the Kingdom.
6	Beneficiary	The beneficiary role represents the individuals who will access the NPHIES portal to consume customized services targeted for the members insured by the HICs.
7	Non-Enterprise User (Researcher, Individual)	The researcher role represents the researchers who will access NPHIES portal to consume customized value-added services related to viewing reports and statistics related to the performance of the health insurance industry in the Kingdom.

Table 5: Roles Catalog

5 WHAT IS NPHIES (AS FAR AS THE FINANCIAL SERVICES ARE CONCERNED)?

The NPHIES is a centralized validating standards-based information exchange gateway to connect all healthcare providers and payers within KSA. Its role is to support the market in providing timely, efficient, and cost-effective products and services to people requiring healthcare in Saudi Arabia.

Breaking this down:

- **Centralized** – financial data exchanges (eClaims transactions) between providers and payers will be facilitated by a single centralized hub. There will no longer be peer to peer exchanges.
- **Processing & Validating** (**Not Adjudicating**) – transactions will be processed and validated for compliance to data formats and coding standards and monitored for compliance with regulatory requirements and good business practices. The platform will validate exchanges and reject invalid submissions.
- **Standards-based** – the data formats for the information exchanges are based on internationally recognized standards that are appropriately constrained to meet the local Saudi business needs. Coded data will similarly use consistent terminology drawn from internationally recognized or Saudi nationally recognized coding standards.
- **Information exchange** – the key purpose of the NPHIES is to facilitate the exchange of consistent and high-quality transactions between providers and payers to support the business of health insurance.
- **Gateway** – the NPHIES will validate and deliver transactions to the intended recipient in real-time or store the transaction for delivery when the recipient is available or reject the transaction if it is invalid.

Summarizing the above points, NPHIES is a single point of contact platform to which all HCPs and HICs may connect to exchange standards-based messages where NPHIES will validate the form and content of those messages to maximize the validity, the standards and compliance of those information exchanges.

5.1 Expected Benefits

- Increased data consistency, quality, and computability for providers and payers;
- Increased consistency in the data requirements for eClaims exchanges;
- Increased satisfaction for providers, payers and patients with the eClaims experience;
- Reduction in overall market costs;
- Increased processing efficiency and regulatory compliance;
- Increased ‘first time right’ exchanges;
- Reduce barriers to entry to the private insurance market.

5.2 What the NPHIES does not Do

- Does not process or adjudicate the transactions. NPHIES is a ‘smart courier’ but does not take on the role of the provider or payer or third-part administrator

- Does not regulate the market, it monitors the transactions and alerts regulators such as CCHI for compliance issues
- Does not determine ‘fraud’, it marks questionable transactions for the payer to consider. It highlights the suspicious transactions based on the rules
- Does not provide an online practice management system for healthcare providers or a claims administration for system payers. It will provide a simple claims entry system to support providers until they acquire a proper healthcare information management system
- Does not provide an online claims backup system, providers and payers are required to properly design and manage their infrastructures

5.3 Information Retention

The Nphies will retain copies of information exchanges to support the market and regulators such as CCHI in dispute resolution, in understanding market health and the management of the regulatory processes.

6 INFORMATION EXCHANGE CONSTRUCTION AND FLOW

6.1 Units of Information

The basic content model in FHIR is the resource, a topic-specific collection of data elements, e.g., a Patient, Organization, Encounter, or Claim, which contains the data elements to support that topic and refers to other Resources to provide the information elements for that topic. Complex information exchanges such as all the information to document an Encounter is modeled as an Encounter resource which provides certain information on the encounter and refers to the appropriate Patient, Practitioner and Observation, etc. resources.

6.2 Information Exchange Packages

HL7 FHIR supports a variety of exchange patterns including point-to-point FHIR RESTful (CRUD) exchange of individual resources; FHIR Operations with defined input and output parameters; exchanges of groups (Bundles) of resources to Message, Document, and other operational endpoints; and the exchange of single resources or resource Bundles over any non-FHIR specified transports such as FTP, SMTP (email), WSI web services, etc.

The business exchanges needed to support eClaim in Saudi have a few defining characteristics with guide the selection of content packaging and content exchange in FHIR:

- The exchanges are made via a central gateway, rather than point-to-point, with the gateway responsible for both validation and routing
- Communicating parties are separate organizations, from each other and the central gateway
- Communicating parties are at a material distance such that latency and connection costs are a business consideration
- The exchanges are typically complex, comprised of multiple resources where the time/version context of the resources is material
- Each party may be required to have their local information repository

This leads to one general packaging guidance, that all needed resources to support the intended information exchange should be included in the same package except where references are made to commonly accessible repositories such as may exist for images, labs, and medications.

Given the design of the NPHIES ecosystem and financial information exchange requirements, NPHIES is implementing FHIR Messaging as a combination of synchronous and asynchronous exchange of FHIR Message Bundles each containing one, or more when permitted, suite of HL7 FHIR Resources which constitute a coherent information exchange such as an eligibility request or claim.

The message bundle is exchanged via the $process-message endpoint of the gateway.

6.2.1 Message Structure Definition

Message Structure defines the characteristics of a message that can be shared between provider/payer and NPHIES, including the type of event that initiates the message, the content to be transmitted and what response(s), if any, are permitted.

6.2.2 Endpoint Operation: Process Message

All the mentioned use cases in Section 7 will refer to one endpoint operation i.e., https://hsb.Nphies.sa/$process-message.

The process message operation accepts a message, processes it according to the definition of the event in the message header, and returns one or more response messages.

Process Message Structure will have in-parameters (Input) and out-parameters (Output).

6.2.2.1 Input

Name	Type	Card.	Description
content	Bundle	1..1	The message to process

Table 6: In parameters of Process Message

6.2.2.2 Output

Name	Type	Card.	Description
return	Bundle	0..1	2 types of responses: • Payer Response Message • Acknowledgement Message Response • Error Notice

Table 7: Out parameters of Process Message

6.2.3 Sample Structure of FHIR Bundle Resource

The structure of a FHIR Bundle Resource and example are shown below:

Bundle Resource	Bundle (type=message)
MessageHeader Resource	MessageHeader (event=claim-request)
Focal Resource	Claim Resource (use=claim, type=pharmacy)
Referenced Resource #1	Patient Resource (Beneficiary)
Referenced Resource #2	Organization Resource (e.g. Payer)
…	
Referenced Resource #n	Practitioner Resource (Servicing Provider)

The bundle resource will have a combination of resources 1,2,n (Data model) depending on the use case.

6.2.4 FHIR Bundle Resource Hierarchical Structure

The hierarchical representation of the sample structure of FHIR Bundle Resource is shown as below:

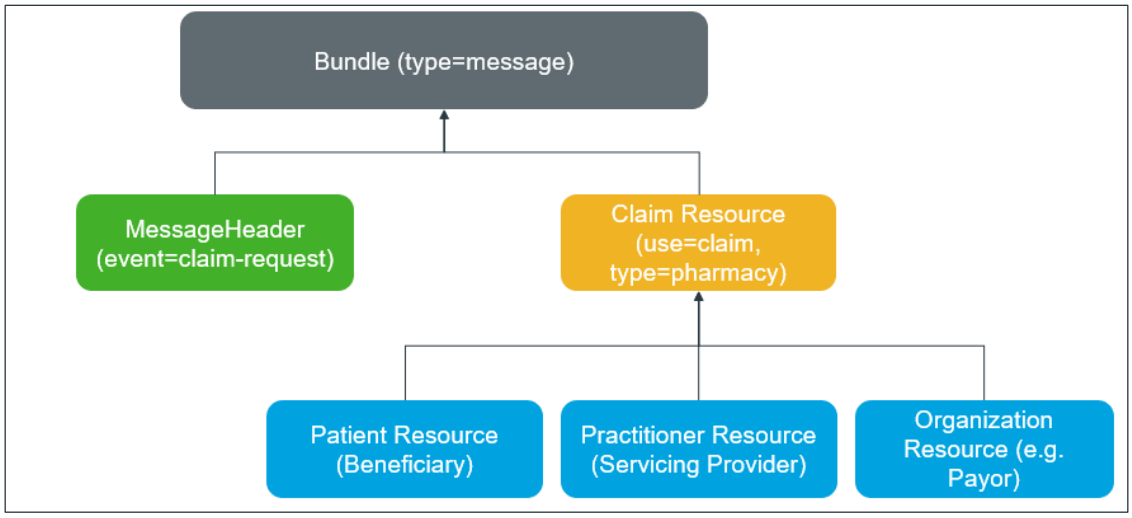

Figure 1: FHIR Bundle Resource Hierarchical Structure

6.2.5 Structure of Selected Financial Services Message Bundles

The message structure for request and response bundles are shown in the tables below.

Eligibility	Authorization	Claim
Bundle (type=message)	Bundle (type=message)	Bundle (type=message)
MessageHeader (event=eligibility-request)	MessageHeader (event=authorization)	MessageHeader (event=claim)
ksa-CoverageEligilibilityRequest	ksa-Claim Resource (use=authorization, type=pharmacy)	ksa-Claim Resource (use=claim, type=pharmacy)
ksa-Patient Resource	ksa-Patient Resource	ksa-Patient Resource
ksa-Organization Resource Provider	ksa-Organization Resource Provider	ksa-Organization Resource Provider
ksa-Organization Resource Insurer	ksa-Organization Resource Insurer	ksa-Organization Resource Insurer
[ksa-Coverage Resource]	ksa-Practitioner Resource	ksa-Practitioner Resource
	ksa-PractitionerRole Resource	ksa-PractitionerRole Resource
	ksa-MedicationRequest Resource	ksa-MedicationRequest Resource
	ksa-DeviceRequest Resource	ksa-DeviceRequest Resource
	[ksa-ClaimResponse Resource]	[ksa-ClaimResponse Resource]

	ksa-Encounter Resource	ksa-Encounter Resource
	[ksa-Coverage Resource]	[ksa-Coverage Resource]
	[ksa-Patient Resource Subscriber]	[ksa-Patient Resource Subscriber]

Table 8: Structure of Selected Request Messages Bundle

Eligibility	Authorization	Claim
Bundle (type=message)	Bundle (type=message)	Bundle (type=message)
MessageHeader (event=eligibility-response)	MessageHeader (event=preauth-response)	MessageHeader (event=claim-response)
ksa-CoverageEligilibilityResponse	ksa-ClaimResponse Resource (use=authorization, type=pharmacy)	ksa-ClaimResponse Resource (use=claim, type=pharmacy)
ksa-Patient Resource	ksa-Patient Resource	ksa-Patient Resource
ksa-Organization Resource Provider	ksa-Organization Resource Provider	ksa-Organization Resource Provider
ksa-Organization Resource Insurer	ksa-Organization Resource Insurer	ksa-Organization Resource Insurer
[ksa_Coverage]	ksa-Practitioner Resource	ksa-Practitioner Resource
[ksa-Patient Resource Subscriber]	ksa-PractitionerRole Resource	ksa-PractitionerRole Resource
	[ksa-Coverage Resource]	[ksa-Coverage Resource]
	[ksa-Patient Resource Subscriber]	[ksa-Patient Resource Subscriber]

Table 9: Structure of Selected Response Messages Bundle

6.2.6 Table of Extensions

Extensions are the FHIR technique for including custom yet standardized addition data elements into a data structure or even a data element to provide additional information nit otherwise define in the base FHIR data standard. The guide will use some extensions already defined in the FHIR R4 specification (http: //hl7.org/fhir/extensibility-registry.html) and also defines some new extension just for the purpose of this guide.

Friendly Name	Description	URL	Datatype
Batch Identifier	A provider supplied id for the Batch. Each Batch must have a unique Batch Id for the issuing provider.	http: //NPHIES.sa/fhir/ksa/NPHIES-	string

Friendly Name	Description	URL	Datatype
		fs/StructureDefinition/extension-batch-identifier	
Batch Number	The number associated with a claim within a Batch.	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-batch-item	positiveInt
Batch Period	The date associated with the Batch Date	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-batch-period	Period
KSA Administrative Gender	The Saudi Administrative Gender codes.	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-ksa-administrative-gender	CodeableConcept
KSA Diagnosis Related Group	The Diagnosis Related Group code assigned to the suite of treatment, proposed, or performed.	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-ksa-diagnosis-related-group	CodeableConcept
Eligibility Response	A reference to the eligibility Response previously returned by the insurer.	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-eligibility-response	Reference
Eligibility Offline Reference	An eligibility string to reference supplied by the insurer when the online services were not available.	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-eligibility-offline-reference	string
Eligibility Offline Date	The date when the insurer provided the eligibility string to reference supplied by the insurer when the online services were not available.	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-eligibility-offline-date	dateTime
Authorization Offline Date	The date when the insurer provided the eligibility string to reference supplied by the insurer when the online services were not available.	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-authorization-offline-date	dateTime
KSA Tax	The amount of KSA Tax (VAT) being levied on the full cost of this lime item.	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-tax	Money
Encounter	The Encounter during which the claimed services were performed.	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-encounter	Reference(Encounter)
Reissue Reason	The reason the adjudicator has reissued an authorization or claim response.	http://NPHIES.sa/fhir/ksa/NPHIES-	CodeableConcept

Friendly Name	Description	URL	Datatype
		fs/StructureDefinition/extension-adjudication-reissue	
Adjudication Outcome	A code indicating the outcome of the adjudication such as rejected, partially approved/paid, or approved/paid as submitted.	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-adjudication-outcome	CodeableConcept
Bundle batch-count	Total number of bundles within the bundle.	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-batch-count	positiveInt
Not in Force Reason	The reason the insurance coverage is not in force.	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-notInForceReason	CodeableConcept
Package	A package billing code or bundle code used to group products and services to a particular health condition	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-package	boolean
Patient Share	Refer to the patient share amount	http://NPHIES.sa/fhir/ksa/NPHIES-fs/StructureDefinition/extension-patientShare	Money
Transfer Extension	Flag to indicate an authorization to transfer services to another provider.	http://nphies.sa/fhir/ksa/nphies-fs/StructureDefinition/extension-transfer	Boolean
Episode of Care	The provider specific episode identifier.	http://nphies.sa/fhir/ksa/nphies-fs/StructureDefinition/extension-episode	Identifier
Newborn	Flag to identify that this claim is for a newborn.	http://nphies.sa/fhir/ksa/nphies-fs/StructureDefinition/extension-newborn	Boolean
Patient Invoice	The number of the patient invoice on which the service was billed.	http://nphies.sa/fhir/ksa/nphies-fs/StructureDefinition/extension-patientInvoice	Identifier
Site Eligibility	Code to indicate whether the patient is eligible or not eligible and why.	http://nphies.sa/fhir/ksa/nphies-fs/StructureDefinition/extension-siteEligibility	CodeableConcept

Table 10: Table of Extensions

6.2.7 Message Events

The list below of codes will be used as message events in MessageHeader of the respective transactions.

Code	Description

eligibility-request	A message requesting the identified patient's insurance, determination if the insurance is in force, and potentially requesting the table of benefits or other insurance details.
eligibility-response	A message responding to the Eligibility Request with errors or insurance details.
authorization-request	A request for prior authorization of products and services.
authorization-response	A response to a request for prior authorization of products and services.
claim-request	A request for adjudication of a claim for products and services.
claim-response	A response to a request for adjudication of a claim for products and services.
status-check	A request to check on the processing status of a prior submission.
status-response	A response to a request to check on the processing status of a prior submission.
cancel-request	A request to cancel the processing, were complete or not, of a prior submission such as a claim.
cancel-response	A response to request to cancel the processing, were complete or not, of a prior submission such as a claim.
payment-notice	A notice providing the current status of a payment.
payment-reconciliation	A report of a payment and the allocation of the payment to the respective claims being settled.
communication-request	A request for supporting information for a previously submitted request.
communication	A provision of supporting information in response to a request or to support a prior submission.
acknowledgement	Message with just a MessageHeader, and optional referenced OperationOutcome if there are errors, to acknowledge the receipt of a message.
poll-request	A request for the next 'n' undelivered messages from the queue of undelivered messages for the requester.
poll-response	A message responding to a poll-request containing up to 'n' requested undelivered messages.
error-notice	A message sent from NPHIES to HIC to indicate a prior response from the HIC contained errors. This message identifies the prior message and the type of error

Table 11: Message Events

6.2.8 List of Message Events, Transactions and Focal Resources

The message event codes are from the http://NPHIES.sa/fhir/message-events CodeSystem.

Transaction List	Focal Resource	Message Event
Eligibility Request	CoverageEligibilityRequest	eligibility-request
Eligibility Response	CoverageEligibilityResponse	eligibility-response
Authorization	Claim	authorization-request
Authorization Response	ClaimResponse	authorization-response
Claim	Claim	claim-request
Claim Response	ClaimResponse	claim-response
Status Check	Task	status-check
Status Response	Task	status-response
Cancel Request	Task	cancel-request
Cancel Response	Task	cancel-response
Communication	Communication	communication
Communication Request	CommunicationRequest	communication-request
Payment Reconciliation	PaymentReconciliation	payment-reconciliation
Payment Notice	Payment Notice	payment-notice
Acknowledgement	N/A	acknowledgement
Poll Request	Task	poll-request
Poll Response	Task	poll-response
Error Notice	OperationOutcome	error-notice

Table 12: List of Message Events, Transactions and Focal Resources

6.2.9 Transactions using the Task Resource

The table below lists the transactions which use the Task resource to accomplish a processing behavior and the Task.code value which indicates the type of activity requested.

Activity	Code	Description
Cancel Request	Cancel or nullify	To request that the activity associated with a prior message be cancelled regardless of whether it has begun or completed processing. If nullify is specified, then the original message may be retained for audit purposes but shall not be given out or displayed.

		Task.focus.identifier = a business identifier (e.g. Claim.identifier) of the main resource of the message to be cancelled. Optional task.input.type = ‘nullify’ and task.input.valueBoolean = ‘true’.
Poll Request	poll	To request the next ‘n’ messages be returned from the NPHIES queue. Typically, these are messages which have not previously been delivered. See Section on Polling.
Status Check	status	To request the processing status of a message, for example for the adjudication of a claim. Task.focus.identifier = a business identifier (e.g. Claim.identifier) of the main resource of the message to be checked.

Table 13: Task Codes

6.2.10 Sample Header Message


```
{
  "resourceType": "Bundle",
  "id": " b4f19206-e136-4213-a1bb-33d14a3b14dd",
  "type": "message",
  "timestamp": "2020-08-28T16:07:00:+03:00",
  "entry": [
    {
      "fullUrl": "urn:uuid:c9904bd5-6039-4408-8d1b-3401cd1ce7a9",
      "resource": {
        "resourceType": "MessageHeader",
        "id": "c9904bd5-6039-4408-8d1b-3401cd1ce7a9",
        "eventCoding": {
          "system": "http://nphies.com/fhir/message-events",
          "code": "claim-request"
        },
        "destination": [
          {
            "endpoint": "http://nphies.sa/license/payer-license/0001",
            "receiver": {
              "identifier": {
                "system": "http://nphies.sa/license/payer-license",
                "value": "0001"
              }
            }
          }
        ],
        "sender": {
          "identifier": {
            "system": "http://nphies.sa/license/provider-license",
            "value": "0001"
          }
        },
        "source": {
          "endpoint": "http://nphies.sa/license/provider-license/0001"
        },
        "focus": [
          {
            "reference": "Claim/1"
          }
        ]
      }
    }
```


Table 14: Sample Header Message

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6.2.11 Message Structure: Bundle

The bundle table is used by all the transactions mentioned in the Data Model.

Sr. No.	Field Name	Type	Card.	Description	ValueSet
1	id	id	1..1	A logical Identifier for the bundle resource. ID must use a GUID (Globally Unique Identifier). [Comments]: A UUID (aka GUID) represented as a URI (RFC 4122); e.g. 'c757873d-ec9a-4326-a141-556f43239520'	N/A
2	type	code	1..1	type of the bundle resource. Default value "message" Indicates that the value is taken from a set of controlled strings defined elsewhere (see Using codes for further discussion). Technically, a code is restricted to a string which has at least one character and no leading or trailing whitespace, and where there is no whitespace other than single spaces in the contents. This datatype can be bound to a ValueSet. [Comments]: Always 'message'	http://hl7.org/fhir/ValueSet/bundle-type
3	timestamp	dateTime	1..1	When the bundle was assembled An instant in time in the format YYYY-MM-DDThh: mm: ss.sss+zz: zz (e.g. 2015-02-07T13: 28: 17.239+02: 00 or 2017-01-01T00: 00: 00Z). The time SHALL specified at least to the second and SHALL include a time zone. Note: This is intended for when precisely observed times are required (typically system logs etc.), and not human-reported times - for those, use date or dateTime (which can be as precise as instant, but is not required to be). instant is a more constrained dateTime	N/A
4	entry	BackboneElement	1..*	Entry in the bundle - will have a resource or multiple resources where the first resource must be "MessageHeader".	N/A

5	entry.fullUrl	uri	1..1	URI, or UUID, for the resource contained within this entry.	N/A
6	entry.messageHeader	DomainResource	1..1	A resource that describes a message that is exchanged between systems	N/A
7	entry.focal-resource	DomainResource	1..1	A resource that is the main focal resource for the message, for example the CoverageEligibilityRequest resource for an eligibility request message.	N/A
8	entry.other resource #1	DomainResource	1..1	A resource that describes another resource which is referenced by the above resources.	N/A
9	entry.other resource #2	DomainResource	1..1	A resource that describes another resource which is referenced by the above resources.	N/A

Table 15: Message Structure: Bundle

6.2.12 Message Structure: Header Request

The header request table is used by all the request transactions mentioned in the Data Model.

Sr. No.	Field Name	Type	Card.	Description	ValueSet
1	id	id	1..1	A logical identifier for the messageHeader resource. ID must use a GUID (Globally Unique Identifier). [Comments]: A UUID (aka GUID) represented as a URI (RFC 4122); e.g. 'c757873d-ec9a-4326-a141-556f43239520'	N/A
2	extension.originalRequest	Reference (Any)	0..1	Reference to the original request related to the message Header [Comments]: Will be used by NPHIES for specific scenario, not to be sent by HIC/HCP	N/A
3	extension.originalResponse	Reference (Any)	0..1	Reference to the original response related to the message Header [Comments]: Will be used by NPHIES for specific scenario, not to be sent by HIC/HCP	N/A
4	eventCoding	Coding	1..1	A code which indicates the type of message, for example: eligibility-	http://NPHIES.sa/terminology/V

				request, claim-request, cancel-response, etc. [Comments]: NA	alueSet/message-events
5	destination.endpoint	url	1..1	The actual (logical) destination. [Comments]: e.g. http://NPHIES.sa/insurer-license/12345	N/A
6	destination.receiver	Reference (Organization)	1..1	Message destination application. A reference to the receiver's organization license. [Comments]: May use the .reference to an included resource or just the .type and .identifier for well-known identifiers such as for providers and insurers. Example: Use: to refer to a well-known insurer .type=Organization, .identifier.type='NIIP' .identifier.system: Identity of the identifier system .identifier.value: identifier in the identifier system	N/A
7	sender	Reference (Organization)	1..1	Message source application . A reference to the sender's organization license that is maintained in the registry. [Comments]: May use the .reference to an included resource or just the .type and .identifier for well-known identifiers such as for providers and insurers. Example: Use: to refer to a well-known provider .type=Organization, .identifier.type='NPI' .identifier.system: Identity of the identifier system .identifier.value: identifier in the identifier system	N/A
8	source.endpoint	url	1..1	The actual (logical) source.	N/A

				[Comments]: e.g. http://NPHIES.sa/iprovider-license/54321	
9	focus	Reference	1..1	A reference to the main resource in the message, for example "CoverageEligibilityRequest" [Comments]: Use .reference to the fullUrl of the included resource	N/A

Table 16: Message Structure: Header Request

6.2.12.1 DataType References: Header Request

Sr. No.	Path	DataType Ref
1	MessageHeader.extension.originalRequest	Ref.1
2	MessageHeader.extension.originalResponse	Ref.1
3	MessageHeader.destination.receiver	Ref.1 Ref.2a
4	MessageHeader.sender	Ref.1 Ref.2a
5	MessageHeader.focus	Ref.1

Table 17: Datatype References for Header Request

6.2.13 Message Structure: Header Response

The header response table is used by all the response transactions mentioned in the Data Model.

Sr. No.	Field Name	Type	Card.	Description	ValueSet
1	id	id	1..1	A logical identifier for the messageHeader resource. ID must use a GUID (Globally Unique Identifier). [Comments]: A UUID (aka GUID) represented as a URI (RFC 4122); e.g., 'c757873d-ec9a-4326-a141-556f43239520'	N/A
2	eventCoding	Coding	1..1	A code which indicates the type of message, for example: eligibility-response, claim-response, cancel-response, etc. [Comments]: NA	http://NPHIES.sa/terminology/ValueSet/message-events
3	destination.endpoint	url	1..1	The actual (logical) destination. [Comments]: e.g. http://NPHIES.sa/iprovider-license/54321	N/A

4	destination.receiver	Reference(Organization)	1..1	Message destination application. A reference to the receiver's organization license that is maintained in the registry. [Comments]: May use the .reference to an included resource or just the .type and .identifier for well-known identifiers such as for providers and insurers. Example: Use: to refer to a well-known insurer .type=Organization, .identifier.type='NIIP' .identifier.system: Identity of the identifier system .identifier.value: identifier in the identifier system	N/A
5	Reference(Organization)	Reference(Organization)	1..1	Message source application . A reference to the sender's organization license that is maintained in the registry. [Comments]: May use the .reference to an included resource or just the .type and .identifier for well-known identifiers such as for providers and insurers. Example: Use: to refer to a well-known provider .type=Organization, .identifier.type='NPI' .identifier.system: Identity of the identifier system .identifier.value: identifier in the identifier system	N/A
6	source.endpoint	url	1..1	The actual (logical) source. [Comments]: e.g., http://NPHIES.sa/insurer-license/12345	N/A
7	response.identifier	id	1..1	The MessageHeader.id of the message to which this message is a response. [Comments]: Id of the MessageHeader in the original (request) message	N/A

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8	response.code	code	1..1	Code that identifies the type of response to the message - whether it was successful or not, and whether it should be resent or not. [Comments]: ok | transient-error | fatal-error	http://hl7.org/fhir/ValueSet/response-code
9	response.details	Reference(OperationOutcome)	0..1	If there are errors which cannot be reported in a business-level response then the full details of any issues found in the message. [Comments]: Specific list of hints/warnings/errors, only supplied if a business level response cannot be supplied. When an OperationOutcome is provided then it is also the .focus.	N/A
10	focus	Reference	0..1	A reference to the main resource in the message, for example "CoverageEligibilityRequest" [Comments]: Use .reference to the full Url of the included resource	N/A

Table 18: Message Structure: Header Response

6.2.13.1 Datatype References: Header Response

Sr. No.	Path	Datatype Ref
1	MessageHeader.response.details	Ref.1 Ref.2a

Table 19: Datatype References for Header Response

6.3 Information Flow

Information exchanges will be satisfied with a combination of real-time synchronous request-response and asynchronous FHIR messaging of information models such as eligibility request and response, claim status check and response, and polling for outstanding responses and return of the response.

The diagram below depicts the typical exchange through the central gateway for exchanges with payers and assumes loose coupling of the gateway front-end (provider side) and back-end (payer side) processes.

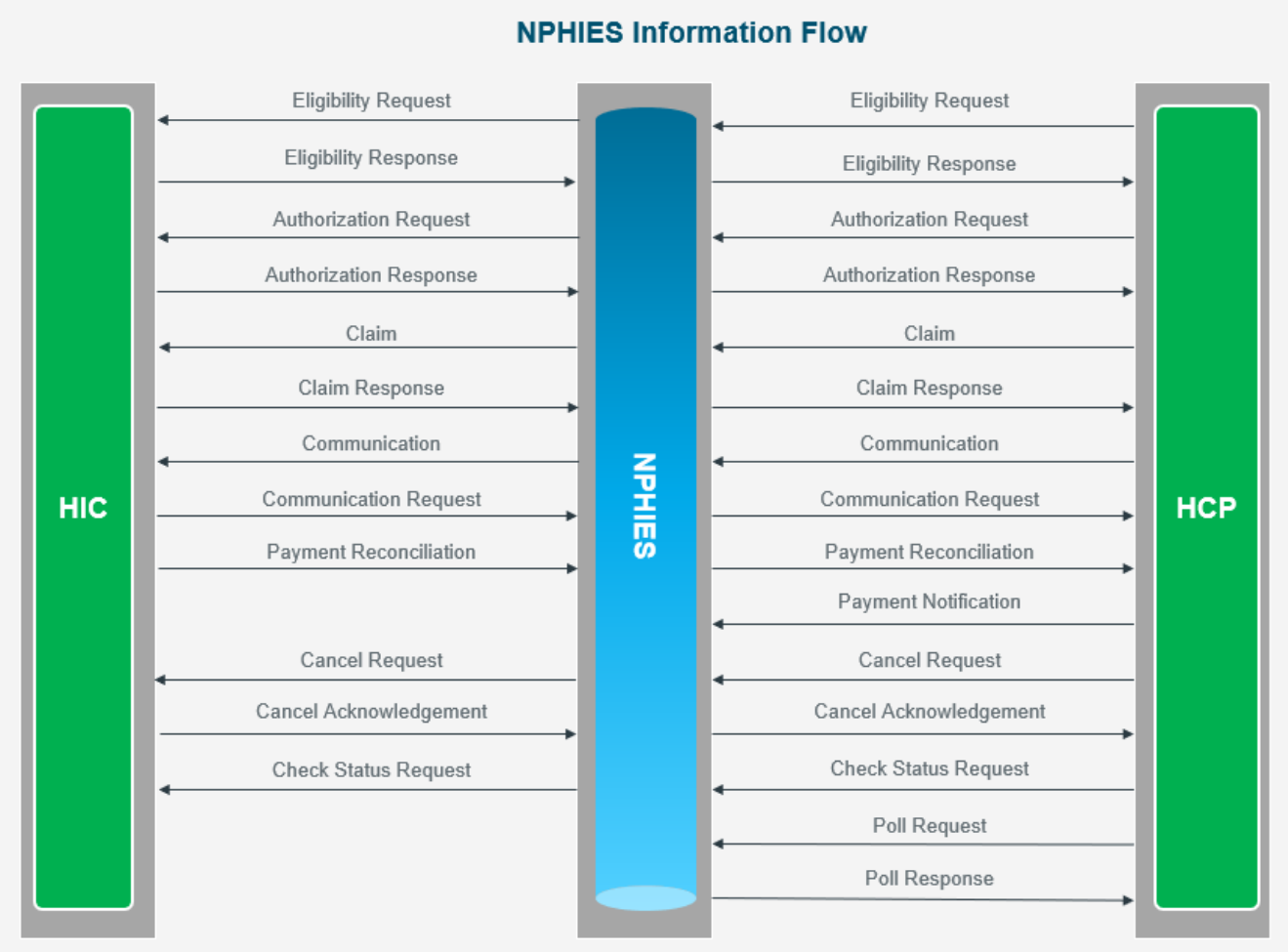

Figure 2: Information Flow

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6.3.1 Message Exchange Cycle

This section will present the message exchange cycle between the different stakeholders on the NPHIES Financial Services platform.

- **Status Codes**: are based on the [**Operation $process-message**] within HL7 FHIR https://hl7.org/fhir/R4/messageheader-operation-process-message.html
- **Communication:** refers to the open communication channel between the HCP/HIC and NPHIES to complete a given message exchange cycle.
    - In the case of a receiving a message containing errors, the receiving system (NPHIES or HIC) opens a new communication channel to review the error details with the authoring system.

6.3.1.1 Happy Scenarios

The section below outlines the message exchange cycle for successful messaging (online and offline) between the HCP and HIC through NPHIES FS platform.

Connection	Connection	Connection	
Happy Path - Online	HCP to NPHIES to HIC	HIC to NPHIES to HCP	Status Code

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Eligibility	Eligibility Request	Eligibility Response	**200 OK**
Authorization	Authorization Request	Authorization Response	**200 OK**
Claim	Claim Request	Claim Response	**200 OK**
Check	Check-Status Request	Check-Status Response	**200 OK**
Cancel	Cancel Request	Cancel Response	**200 OK**
Communication	Communication	Acknowledgement	**200 OK**
Poll	PollRequest	Poll Response (Business Response)	**200 OK**
Payment	PaymentNotice	Acknowledgement	**200 OK**
Batch	BatchRequest	Batch Response	**200 OK**

Table 20: Communication Online - Happy Path

Connection	**Connection**	**Connection**	
Happy Path - Offline	**HIC to NPHIES**	**NPHIES to HIC**	**Status Code**
Communication	Communication Request	Acknowledgement	**200 OK**
Payment	Payment Reconciliation	Acknowledgement	**200 OK**
Deferred Claim Response	Claim Response	Acknowledgement	**200 OK**
Deferred Authorization Response	Authorization Response	Acknowledgement	**200 OK**

Table 21: Communication Offline - Happy Path

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6.3.2 Error Handling

The section below outlines the message exchange cycle between the HCP and HIC through NPHIES FS platform, where some of the messages contain errors that are reported by the receiving system to the authoring system in order to be corrected and submitted again.

When a message is submitted to NPHIES by an HCP or HIC, NPHIES will validate the message and if errors are found, it will send back a response indicating the nature of the error. If possible then response message from NPHIES will contain a business level response such as a claim-response message. However, if it's not possible to construct a business level message then NPHIES will respond with just an OperationOutcome resource containing the error codes. OperationOutcome would be used, for example, when a message received is unreadable, or the sender/ receiver is invalid, or the message type is not valid.

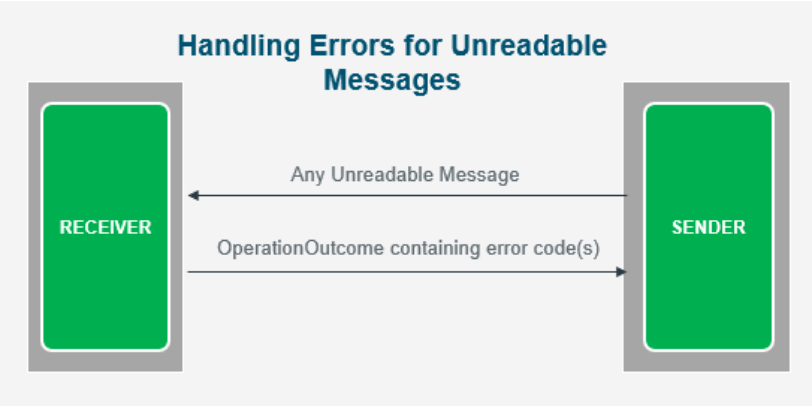

Figure 3: General Error Handling

General Error Handling

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Sender	Receiver
Unparsable Message	OperationOutcome
Parsable + Insufficient Information	OperationOutcome
Parsable + Sufficient Information/ Invalid	ResponseMessage + Errors

Table 22: General Error Handling Mechanism

6.3.2.1 HCP Error Handling

In the event of HCP sending a message with errors to NPHIES, NPHIES responds to HCP with a message or an OperationOutcome to advise that their request contained errors. The diagram and table below outline the response based on the type of error.

Figure 4: HCP Error Handling

Connection
Error Handling (HCP)

Connection	Connection	
HCP	**NPHIES**	**Status Code**

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Unparsable Message	BusinessRequest	OperationOutcome (single resource)	**300+**
Parsable + Insufficient information	BusinessRequest	OperationOutcome (single resource)	**300+**
Parsable + Sufficient information + Invalid	BusinessRequest	BusinessResponse (Error)	**200 OK**
HCP Connection Timed out	BusinessRequest	BusinessResponse (Queued)	**200 OK**

Table 23: HCP Error Handling

6.3.2.2 HIC Error Handling

In the event of HIC sending a message with errors to NPHIES, NPHIES initiates a new message exchange with the HIC and sends an error-notice message listing the errors in the received message from the HIC. The diagram and table below outline the response based on the type of error.

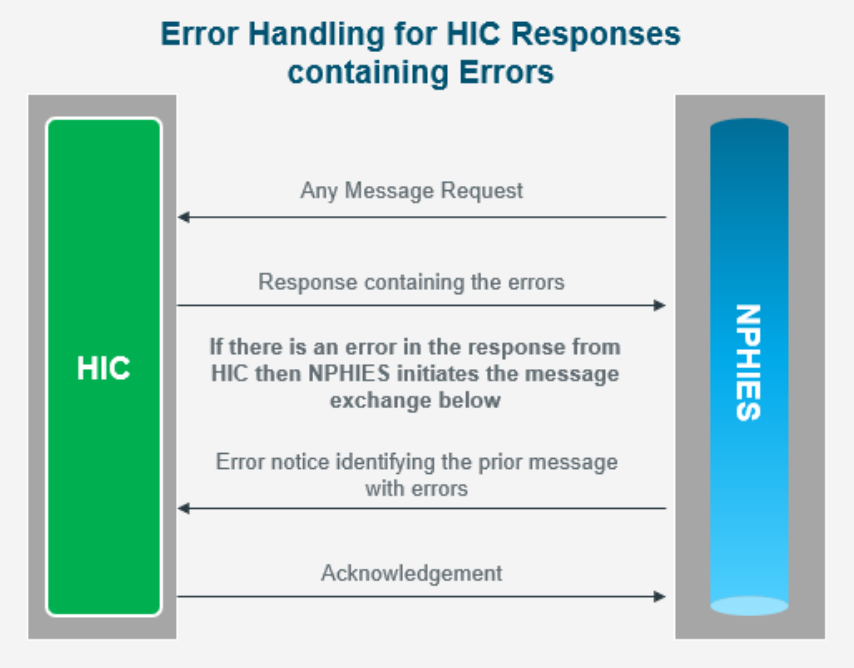

Figure 5: HIC Error Handling

Connection	Connection-1	Connection-1	Connection-1	Connection-2	Connection-2	

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Error Handling (HIC)	HIC	NPHIES	HCP	NPHIES	HIC	Status Code
Online Response (Eligibility, Cancel and Check Status) **Unparsable Message or Parsable + Insufficient Information/ Invalid**	Business Response	Business Response (Error/ PayerOffline)	Business Response (Error/ PayerOffline)	ErrorNotice (Message Header with an OperationOutcome). Containing the identifier for the request.	Acknowledgement (OK, or Error)	**200 OK**
Online Response (PriorAuth, Claim, Communication) **Unparsable Message or Parsable + Insufficient Information/ Invalid**	Business Response	Business Response (Queued)	Business Response (Queued)	ErrorNotice (Message Header with an OperationOutcome). Containing the identifier for the request.	Acknowledgement (OK, or Error)	**200 OK**

Table 24: HIC Error Handling

6.3.2.3 NPHIES Error Handling

In the event of NPHIES sending a message with errors to the HIC, the HIC will send back an acknowledgment to confirm receiving the error-notice or containing an OperationOutcome listing the errors in the received message from NPHIES.

Connection Error Handling (NPHIES)	Connection-2 NPHIES	Connection-2 HIC	Connection-2 HIC	Connection-2 NPHIES	Status Code
Unparsable Message	BusinessRequest	BusinessRequest	ErrorNotice. Containing the identifier for the request.	ErrorNotice. Containing the identifier for the request.	**200 OK**
Parsable + Insufficient Information/ Invalid	BusinessRequest	BusinessRequest	ErrorNotice. Containing the identifier for the request.	ErrorNotice. Containing the identifier for the request, as well as the identifier for the incorrect response.	**200 OK**

Table 25: NPHIES Error Handling

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6.3.3 FHIR Messaging

A request-response exchange of FHIR Message Bundles where the Bundle contains: a MessageHeader resource identifying the logical sender and receiver, a message event code for the type of message, and a reference to the focal resource; and all other required supporting of locally referenced resources. See http://hl7.org/fhir/R4/messaging.html

6.3.4 Polling

In cases, where the payer cannot provide the final response in real-time, for example, due to using overnight adjudication or requiring human review, then the Polling Approach, using the same messaging architecture shown in the Information flow will be used. The gateway will maintain a queue for all messages which could not be delivered to the provider as responses to real-time requests from the provider. This is likely to include responses to claim adjudications, prior authorization adjudications, request for additional information and payment reconciliations. The provider sends a Poll request to the gateway which responds with the next response message from the queue (up to 'n' pended messages may be requested) or with an indication that there are no further messages in the queue.

Poll provides supporting information for the poll request. The response to a Poll is a Task referring to: a previously undelivered response message; a task referring to 0 or more Resources; or a Task which may contain errors.

A simple Poll request, one which doesn't specify additional input parameters: include-message-type, exclude-message-type, period or count; would return any single pended resource. Specific types of business behaviors may be supported by providing values for the filtering elements in the .input element, for example:

- Get any pended resource - no filters (parameters) specified
- Get deferred response to a Claim - specify the Claim in the .focus
- Get all requests for supporting information - specify 'communication-request' as an 'include-message-type'
- Get up to 5 PaymentReconciliations – specify “payment-reconciliation” as an ‘include-message-type’ and 5 as a count
- Get any message except a PaymentReconciliation - specify ‘payment-reconciliation’ as an 'exclude-message-type'
- Get a PaymentReconciliation message – specify a 'period' which contains the expected reconciliation creation date, and specify 'payment-reconciliation' as an 'include-message-type'
- Get up to 50 messages – specify a count of 50

Upon processing of the request, the Task may contain errors or a reference to the resource(s) found.

6.3.4.1 Task Input Type

Parameters	Card.	Datatype	Description
include-message-type	0..*	valueCode	Filter: message event types to include by event code of the desired types of messages (MessageHeader.event.coding.code)
period	0..1	valuePeriod	The date range to filter messages based on when the message was received by NPHIES
count	0..1	valuePositiveInt	Maximum number of messages to return from the queue to a limit of 100, 1 if not supplied
exclude-message-type	0..*	valueCode	Filter: message event types to exclude by event code of the desired types of messages (MessageHeader.event.coding.code)

Table 26: Task Input Types

Multiple include-message-type and exclude-message-type parameters may be specified, however, include-message-type and exclude-message-type parameters are mutually exclusive so only includes or excludes should be used at a time not both.

A combination of parameters may be used and only the parameters necessary should be specified.

To obtain responses to a given message, put the business identifier in Task.focus.identifier.

6.3.5 NPHIES Messaging Mechanism

The NPHIES will expose a FHIR operation end-point to enable the market HIC/ HCPs to exchange FHIR R4 messages that are built based on the NPHIES profiles. HIC/HCPs will exchange the following types of messages to support the various use cases.

Below is the list of message types exchanged between HCPs, NPHIES, and HICs.

HCP and NPHIES Initiated Messages:

Sr. No.	Initiate	Request Message	Response Message
1	HCP	Coverage Eligibility Request	Coverage Eligibility Response
2	HCP	Authorization Request	Authorization Response
3	HCP	Claim Request	Claim Response
4	HCP	Communication	Acknowledgement
5	HCP	Payment Notice	Acknowledgement
6	HCP	Check Status	Status Response
7	HCP	Cancel Request	Cancel Response
8	HCP	Poll Request	Poll Response
9	NPHIES	Error Notice	Acknowledgement

Table 27: HCP and NPHIES Message Types

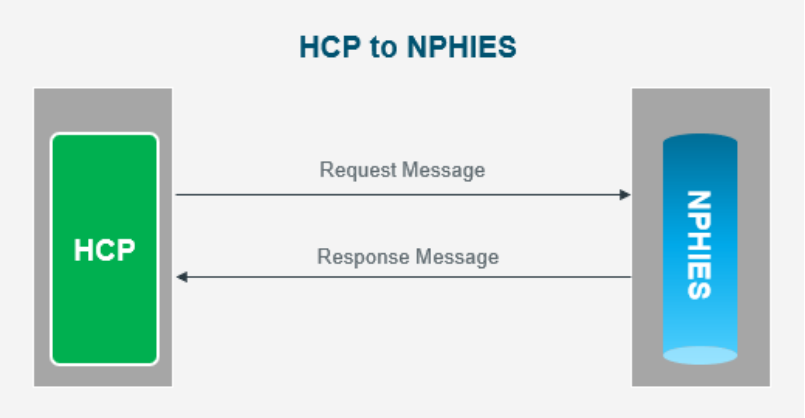

Figure 6: HCP to NPHIES Message Types

Figure 7: NPHIES to HIC Message Types

HIC Initiated Messages:

Sr. No.	Initiate	Request Message	Response Message
1	HIC	Communication Request	Acknowledgement
2	HIC	Payment Reconciliation	Acknowledgement
3	HIC	Authorization Response (Deferred)	Acknowledgement
4	HIC	Claim Response (Deferred)	Acknowledgement

Table 28: HIC Message Types

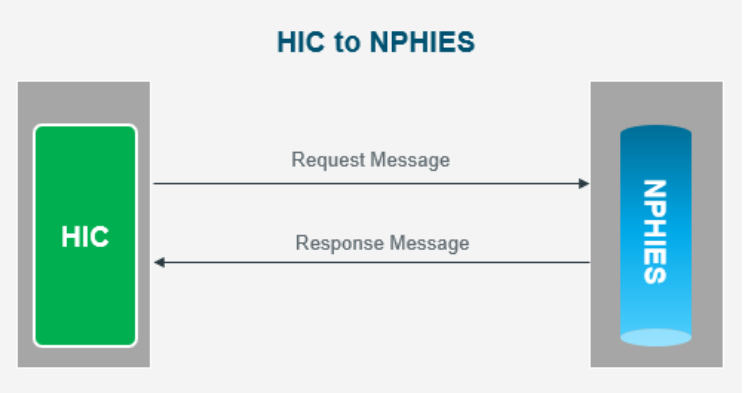

Figure 8: HIC to NPHIES Message Types

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King Fahd Road, Al Malqa, Riyadh 13524

EMAIL:
CALL CENTER: 92 000 4299
WEBSITE: NPHIES.sa

6.3.5.1 Message initiated by HIC

When a HIC has a message to send to NPHIES or HCP that is not in immediate response to a request from NPHIES, e.g. response to a prior authorization; deferred adjudication to a claim; or communication request; payment reconciliation, then the HIC shall initiate a message exchange by calling NPHIES' $process-request end-point with the message (for example: claim-response, priorauth-response) to be sent to NPHIES and NPHIES will respond with a response message indicating the successful receipt of the message or the existence of errors.

6.3.5.2 Messages Received by HIC

HICs will expose a static endpoint to receive NPHIES messages. HICs will expose one RESTful API endpoint and service to receive NPHIES FHIR R4 messages. HICs will expose another RESTful API endpoint to enable NPHIES to validate the HICs online availability. HIC API example is provided as: https://InsuranceCompany.sa/api/fs/fhir**/$process-message.**

HIC API will do the following:

- Ensure Trusted communication – private key encryption using mutual certificates to allow senders and receivers to identify and authorize the communication
- Exchange of messages using HTTP Request Response
- Maintain the agreed behaviour for the exchange and processing of messages

6.3.5.3 Message initiated by HCP

When an HCP has a message to send to NPHIES or to HIC then the HCP shall initiate a message exchange by calling NPHIES' $process-request endpoint with the message to be sent to NPHIES and NPHIES will respond with a response message indicating the successful receipt of the message or the existence of errors.

6.3.5.4 Messages Received by NPHIES

NPHIES provides a messaging endpoint at https://NPHIES.sa/api/fs/fhir**/$process-message**.
NPHIES API will do the following:

- Ensure Trusted communication – private key encryption using mutual certificates to allow senders and receivers to identify and authorize the communication
- Exchange of messages using HTTP Request Response
- Maintain the agreed behaviour for the exchange and processing of messages

6.3.6 Queue Management

The NPHIES queue will be built for Provider systems as well as Payer systems. The primary goal of building the queue is to ensure that data will not be lost for any of the parties involved. Also, the queue is responsible for the efficient delivery of data to the respective systems. The messages will be supplied on a first-in first-out basis and will be removed from the NPHIES queue if transmitted to the

requester and no transmission error being detected by NPHIES and the receipt of response from the Payer to confirm the receipt of each queued transaction.

Provider systems should be programmed to check for queued messages daily and for periodic or allow for manual checking during the day which is needed for retrieving responses to prior authorizations for urgent care.

The NPHIES will be pushing data to Payer systems as soon as a message comes in the queue to be transferred to them. Validation failures and payer timeouts would lead to the gateway short-circuiting and sending responses to HCPs on behalf of the Payer and identifying NPHIES as the author of the response. The NPHIES generated response may identify errors in the message received or may indicate that the message has been queued for delivery to the Payer.

Once the Payer system is available, NPHIES will push all the pended messages one by one to Payer system. Payer will review the requests and then send the responses to NPHIES which will queue the responses for intended Provider.

6.3.7 Methods to Reduce Polling Requests

Although a polling check is a relatively light transaction, the load can become considerable if many providers are checking at a high frequency. While a formal subscription-publication model could be instituted the methods proposed below are lighter, require less maintenance and have been found to provide the same or similar results depending upon the types of providers:

- Message Tagging - a tag may be added by the gateway to provider-bound response messaging to indicate that there are queued messages waiting. For example:

```
"resource":{
      "resourceType": "MessageHeader",
      "id": 123,
      "meta": {
            "lastUpdated": "2020-12-13",
            "profile": [],
            "tag": [{
                  "system":
                "http://nphies.sa/terminology/CodeSystem/meta-
                tags",
                  "code": "queued-messages"
                  }
                ]
      }
```

6.3.8 Resource Instance Example

Patient Resource sample is provided in JSON format below:


```
{
  "fullUrl": "http://pr-fhir.com.sa/Patient/3",
  "resource": {
    "resourceType": "Patient",
    "id": "3",
    "meta": {
      "profile": [
        "http://nphies.sa/fhir/ksa/nphies-fs/StructureDefinition/patient|1.0.0"
      ]
    },"identifier": [
      {
        "type": {
          "coding": [
            {
              "system": "http://nphies.sa/terminology/CodeSystem/patient-identifier-type",
              "code": "IQAMA"
            }
          ]
        },
        "system": "http://moi.gov.sa/id/iqama",
        "value": "00000000003"
      }
    ],
    "active": true,
    "name": [
      {
        "text": "Muhammad Ali Abbas",
        "family": "Abbas",
        "given": [
          "Muhammad",
          "Ali"
        ]
      }
    ], "gender": "male",
    "_gender": {
      "extension": [
        {
          "url": "http://nphies.sa/fhir/ksa/nphies-fs/StructureDefinition/extension-ksa-admir
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://nphies.sa/terminology/CodeSystem/ksa-administrative-gender"
                "code": "male"
              }
            ]
          }
        }
      ]
    },"birthDate": "2010-08-21"
  }
}
```


Figure 9: Patient Resource Example

6.3.9 Identify Code Lists

CodeableConcept: A CodeableConcept represents a value that is usually supplied by providing a reference to one or more terminologies or ontologies but may also be defined by the provision of text.

There are fields whose 'Type' is CodeableConcept in message structure definition tables listed in Data Model, and they refer to a ValueSet URL. These URLs are of 2 types:

- Original HL7 link: Example (http://hl7.org/fhir/ValueSet/payeetype)

  For these type of fields, the FHIR hl7 code list has been used, this is usually for field CodeableConcept type (required).

- NPHIES Codes List : Example (http://NPHIES.sa/terminology/ValueSet/related-claim-relationship)

  For these type of fields, a NPHIES KSA customized list has been created to address the market specific needs. All these links are needed in the transaction to be used as an identifier to the code list being used for the specific field.

6.3.9.1 Find Related CodeSystems and ValueSets

- Copy the ValueSet link from Message Structure tables defined in Data Model or from the NPHIES profile excel sheet available on Community Portal. Refer to https://cportal.NPHIES.sa/ and navigate to HD → Documentation → NPHIES CodeableConcept Excel file.

- Find the CodeSystem corresponding to the selected ValueSet in CodeableConcept excel file. Refer to https://cportal.NPHIES.sa/ and navigate to HD → Documentation → NPHIES CodeableConcept Excel file and look for the CodeSystem matching the ValueSets in NPHIES ValueSet sheet.

- The CodeSystem will include the list of possible codes to be used in CodeableConcept excel file. Refer to https://cportal.NPHIES.sa/ and navigate to HD → Documentation → NPHIES CodeableConcept Excel file and look for the codes listed in NPHIES CodeSystem Sheet.

For more information about FHIR ValueSets and CodeSystems, refer to the link:
http://hl7.org/fhir/r4/terminology-module.html

6.3.10 Special Handling for Elements

6.3.10.1 Adjudication Elements in Claim, Claim Response

In the adjudication structure, there are four elements of interest in the column category, reason, amount, and value. Some category codes require a monetary amount, therefore, use the amount element while other category codes provide a quantity and therefore, use the value element. The table below indicates which element to use for each of the category codes.

Category Code	Element
approved-quantity	value

benefit	amount
coPay	amount
deductible	amount
discount	amount
eligible	amount
eligpercent	value
patientShare	amount
tax	amount
unallocDeduct	amount
approved-quantity	value

Table 29: Adjudication Elements

6.3.10.2 Category Codes and Supporting Info

Category Code	supportingInfo.code	supportingInfo.timing	supportingInfo.value
info	NA	NA	valueString
onset	NA	timingDate	NA
attachment	NA	NA	valueAttachment
missingtooth	.coding.system= http://Nphies.sa/terminology/CodeSystem/fdi-oral-region	timingDate	NA
hospitalized	NA	timingPeriod	NA
employmentImpacted	NA	timingPeriod	NA
lab-test	.coding.system= http://loinc.org	NA	valueQuantity: system = http://unitsofmeasure.org
reason-for-visit	.coding.system= http://Nphies.sa/terminology/CodeSystem/visit-reason	NA	NA
days-supply	NA	NA	valueQuantity: system = http://unitsofmeasure.org
vital-sign-weight	NA	NA	valueQuantity: system = http://unitsofmeasure.org code= kg
vital-sign-systolic	NA	NA	valueQuantity: system = http://unitsofmeasure.org code= mm[Hg]
vital-sign-diastolic	NA	NA	valueQuantity: system =

Category Code	supportingInfo.code	supportingInfo.timing	supportingInfo.value
			http://unitsofmeasure.org code= mm[Hg]
icu-hours	NA	NA	valueQuantity: system = http://unitsofmeasure.org code= h
ventilation-hours	NA	NA	valueQuantity: system = http://unitsofmeasure.org code= h
vital-sign-height	NA	NA	valueQuantity: system = http://unitsofmeasure.org code= cm
chief-complaint	NA	NA	NA
temperature	NA	NA	valueQuantity: system = http://unitsofmeasure.org code= Cel
pulse	NA	NA	valueQuantity: system = http://unitsofmeasure.org code= /min
oxygen-saturation	NA	NA	valueQuantity: system = http://unitsofmeasure.org code= %
respiratory-rate	NA	NA	valueQuantity: system = http://unitsofmeasure.org code= /min
last-menstrual-period	NA	timingDate	NA
birth-weight	NA	NA	valueQuantity: system = http://unitsofmeasure.org code= kg

Table 30: Category Codes and Supporting Information

6.4 Message Transmission

Message Transmission in case of HCP's connection gets timeout or HIC is offline

- If HCP connection times-out/ disconnects before receiving the response:
    - Poll Request can be used to fetch the offline responses available in NPHIES.

- Poll Request can't be used with Eligibility or status check use cases as this response must be real time while the connection is opened. In this case, HCP is expected to send another Eligibility request or status request to the HIC.
- If the HCP sends the same exact request again. NPHIES will return the response received from the HIC matching the sent request. If the HCP sends a transaction and does not receive any response back, he should send exactly the same transaction again, so he can get the answer which may have arrived at NPHIES while the provider was reconnecting to NPHIES.
- If the HCP sends a Poll request, NPHIES will return the valid responses based on the criteria sent in the Poll Request (Period, Transactions to be included … etc.)

- If HIC is offline
  - NPHIES will send a response message to the HCP indicating the successful posting of the message and including whether that transaction is queued or the returning the error code in case the payer is offline.
  - NPHIES queues the messages to be sent to the HIC as soon as its back online, where queuing is applicable.
  - HIC can then send the needed offline response in which the HCP can pick up the response using the Poll Message.

6.5 Newborn Eligibilty Authorization Claims

Newborns usually do not have their own insurance (coverage) from the date of birth to about 30 days, so the eligibility check, authorizations, and claim for services provided to the newborn will include the newborn's (patient) patient information and will use the mother's insurance (coverage). However, because the newborn's gender and date of birth in the patient resource do not match that of the insurer-saved subscriber, the newborn extension is specified in the eligibility, approval, or eligibility message to notify the insurer that the message is for the newborn.

The eligibility message only requires the addition of the newborn extension, while authorizations and claims require the birth-weight to be included in the supportingInfo section.

Note: We need to describe how to enter the birth weight.

6.6 Patient Policy Discovery

HIDP - Health Insurance Data

When a provider does not already know which insurers have policies for a patient then may access the HIDP-API, Health Insurance Data, to obtain a list of insurers having policies for the patient, *for more information, refer* to *the document* *Beneficiary discovery Insurance HIDP*.

7 USE CASES

7.1 Check Eligibility Cycle

This use case enables the HCPs to verify the beneficiary's insurance coverage benefit plans which makes them eligible to receive healthcare services at the given facility.

Note: if the provider doesn't know the patient insurance then the provider may use the HIDP-API to obtain a list of the patient's insurance so they can then send the eligibility checks to those insurers (see section 6.6).

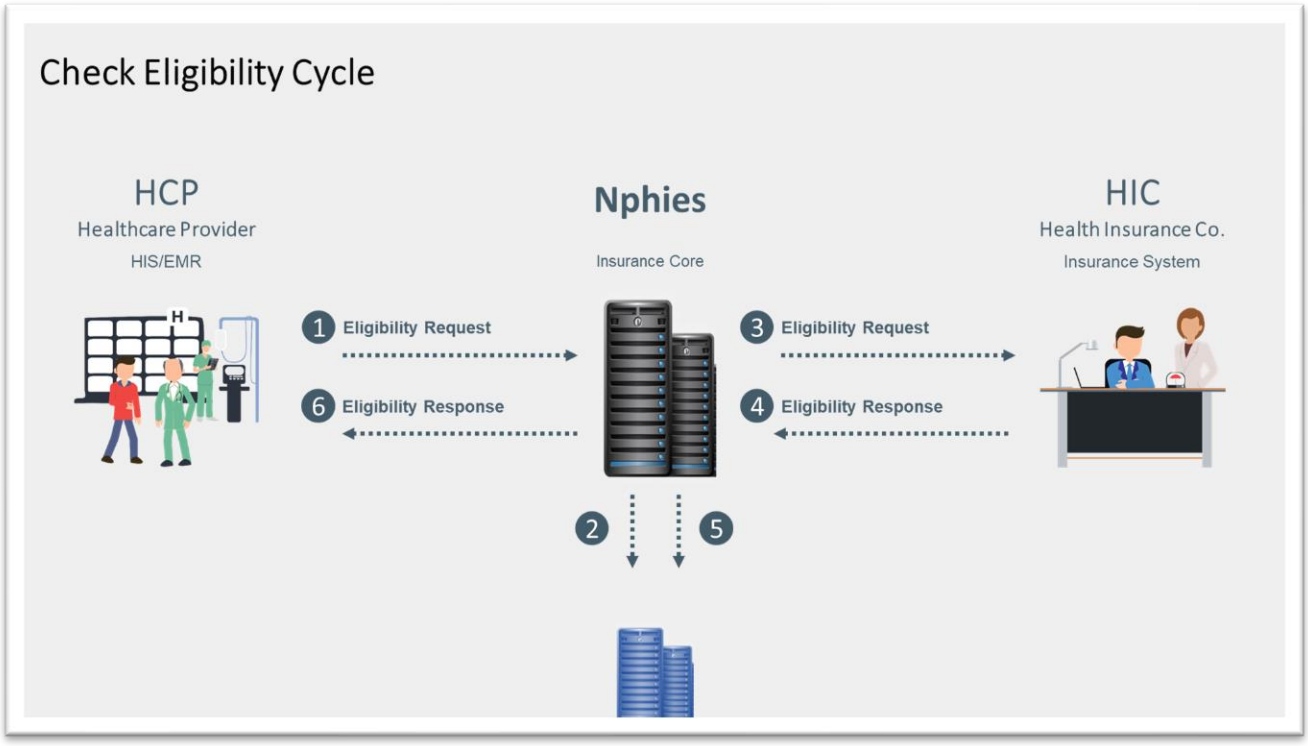

Figure 10: Check Eligibility Cycle

Eligibility Use Case Guidance

Type	Description	Required Resources
Discovery	The insurer is requested to report on any coverages which they are aware of in addition to any specified.	Patient identifier
Validation	A check that the specified coverages are in-force is requested.	Option 1: Patient Identifier + Coverage Option 2: Patient Identifier + "Discovery" as eligibilityrequest-purpose
Benefit	The plan benefits and optionally benefits consumed for the listed, or discovered if specified, coverages are requested.	Option 1: Patient Identifier + Coverage Option 2: Patient Identifier + "Discovery" as eligibilityrequest-purpose

Table 31: Eligibility Use Case Guidance

7.2 Process Claim Cycle

This use case enables the HCP to electronically submit the health insurance claims to the HIC for adjudication. This provides for both single and batch of claims submission.

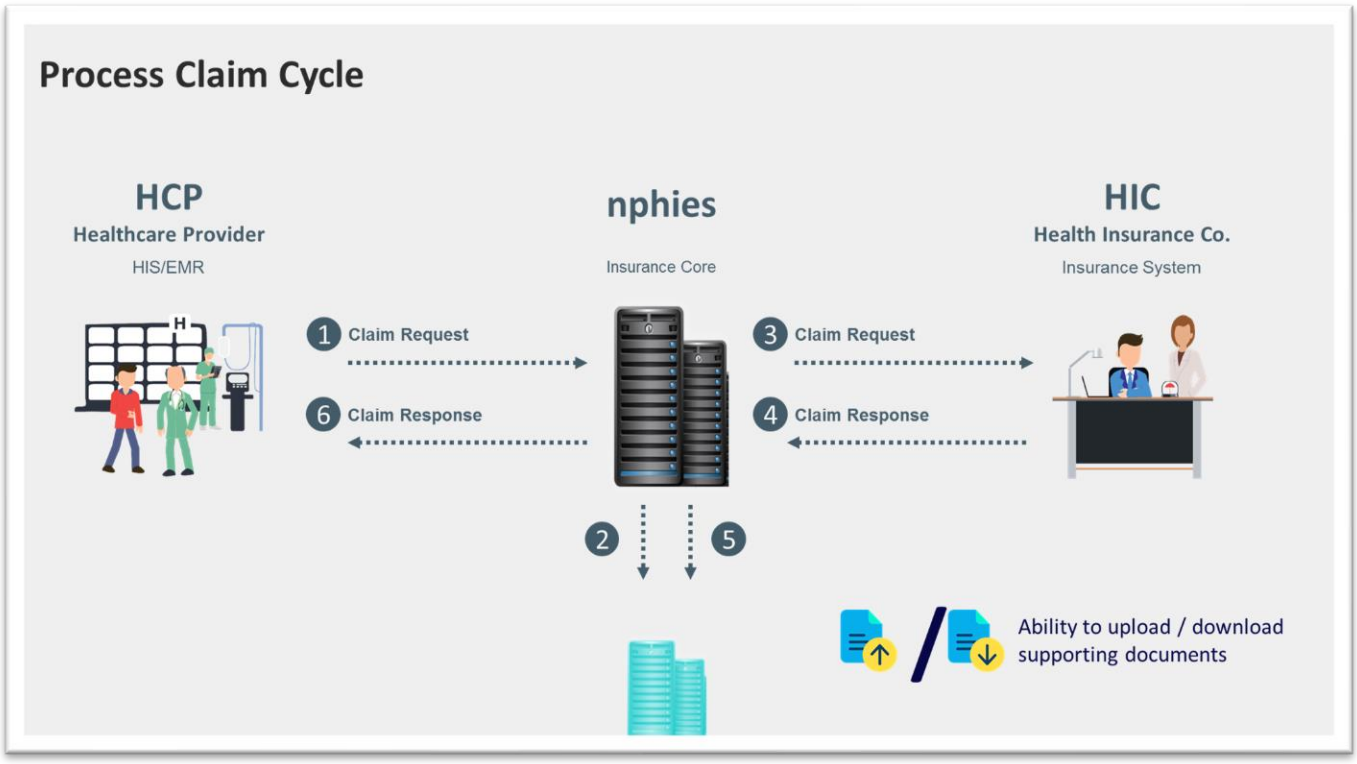

Figure 11: Process Claim Cycle

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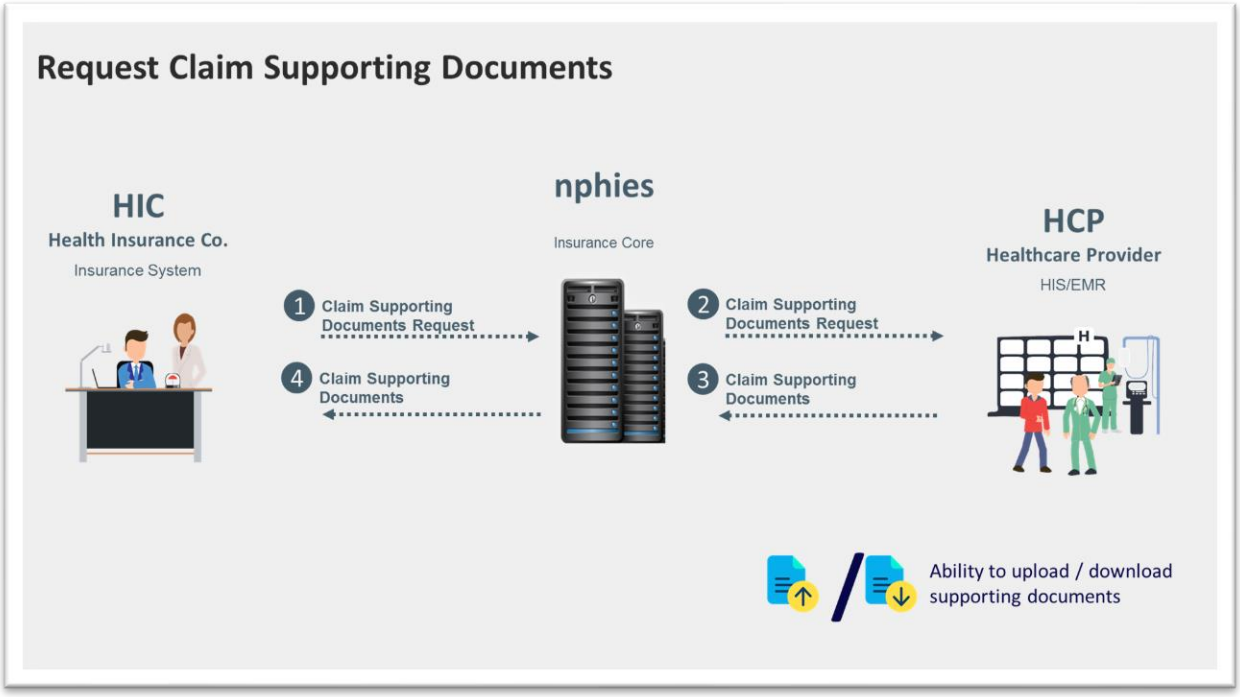
EMAIL:
CALL CENTER: 92 000 4299
WEBSITE: NPHIES.sa

7.3 Request Claim Supporting Documents

This use case enables the HICs to request supporting document(s) for a specified transaction to support business processes such as adjudication.



7.3.1 Sending Claim Supporting Documents after adjudication (Claim re-submission)

When an HCP receives a complete claim response from the HIC with items which are partially approved and where the provider does not agree with the adjudication result, then the Provider may:

- Submit through Commmuinication the required supporting information for the partially approved or rejected items sent. the payer will receive the supporting info and can issue a revised claim response.

- In case any services were needed to be added on a “complete” claim, then the provider will send another “New” claim with the same episode Identifier as the first one.

To know more on how this can be done, Please Refer to Commuinity Portal and navigate to HD → Documentation → User Guides & Manuals Description → Claims Re-submission with Supporting Information Guide.

7.4 Request Authorization Cycle

The use case enables the HCP to obtain an approval from the HIC to receive reimbursement for delivering the requested service/ treatment to the beneficiary.

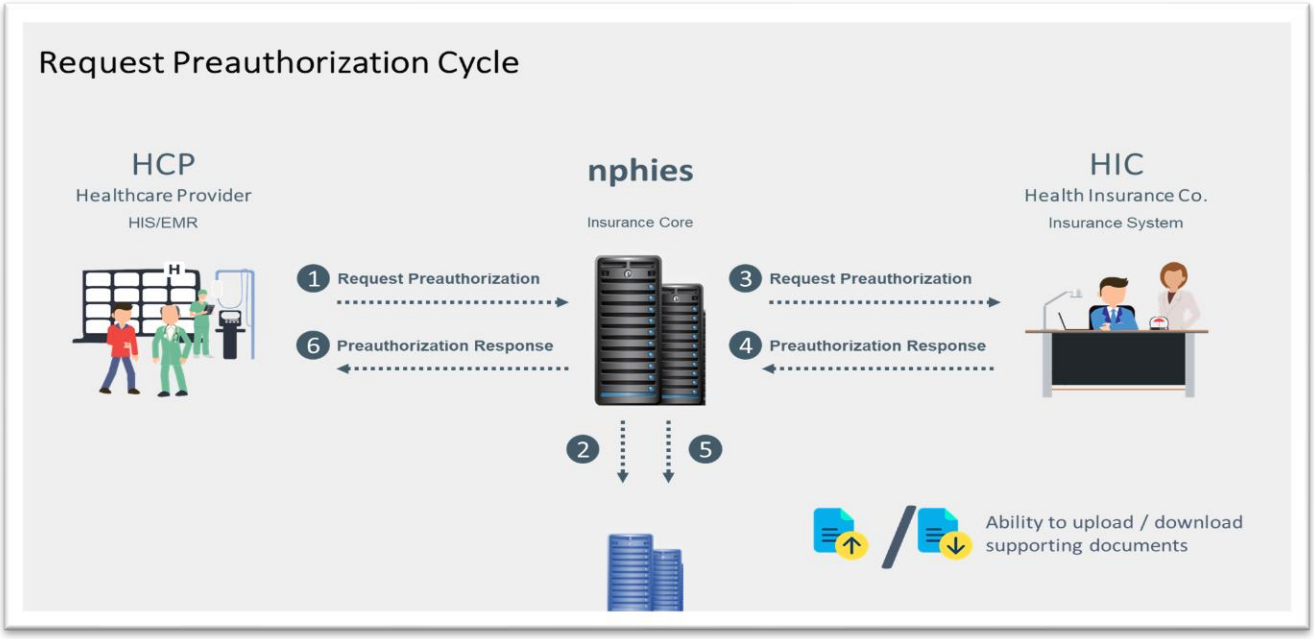


Figure 12: Request Authorization Cycle

7.4.1 Patient Referral Authorization – Transfer of Care

Use Case

A provider is unable to provide some services to the patient and therefore needs to request the transfer of services to another provider by sending an authorization for the transfer to the patient's insurer.

Referral Authorization handling on nphies

Follow the below steps to process Patient Referral Authorization on nphies,

1. The first provider submits a new authorization to update the previous authorization and remove the services that are unable to perform.

2. The first provider requests a second pre-authorization for referral with flag (**extension-transfer = true**)[1] for certain services that are not available at the facility. Once approved by the payer, the payer can send the following information through the following channel(s),

    - To the first provider in the authorization response,

- The authorization response adjudication details will indicate the approved-quantity for each of the services which are approved for the transfer. The authorizarion reference provided in the **Claim.preAuthRef** is the first provider's authorization number for that transfer.

- The authorization response should include in the **processNote** element: the name of the second provider, the authorization number for the second provider, any additional instructions for the service(s) being authorized.

- The approved quantity in the item elements indicates what services are approved for transfer, provides the result of the adjudication outcome, but the implementor should rely on the approved quantity as the fees charged by the second provider may not match those of the first provider.

- SMS message to patient: the name of the second provider, newly generated authorization number and the authorized service(s).

- To the second provider via insurer's portal or email or a hardcopy: the name of the second provider, a newly generated authorization number and the authorized service(s).

- The authorization for the second provider is considered as an offline authorization.

3. The patient goes to the second provider, if the provider sends an eligibility to receive the Table of Benefits (TOB), then it must include the extension-transfer flag in the eligibility request.

4. The second provider can submit a claim for the authorized services by including the following,

   - supportingInfo: the reason for visit: Referral, including the name of the provider in Claim.referral.display.

   - insurance.preAuthRef: the pre-authorization reference number that was supplied.

   - **Claim.extension.authorizationOffLineDate** extension providing the date of the authorization.

5. To extend the pre-authorization, the second provider creates a new pre-authorization request that includes,
   - supportingInfo: the reason for visit and referral elements as in Step 4.

   - insurance.preAuthRef: the pre-authorization reference number that was supplied.

   The payer should be aware that the referred services may be provided by an out-of-network provider and it should not be rejected for this reason.

6. Any further authorization extensions refer to the initial extension authorization request, therefore this is no longer an offline adjudication and it does not require a reason for visit.

[1] Use the extension below to indicate whether the request is for a transfer.

Table 32: Transfer Extension Flags

Field	Description	Min	Max	Data type
CoverageEligbiltyRequest.extension.transfer	Flag to indicate an authorization to transfer services to another provider has been issued	0	1	Boolean
Claim.extension.transfer	Flag to indicate an authorization to transfer services to another provider	0	1	Boolean

Example of the transfer extension

```
  "extension": [
   {      "url": "http://nphies.sa/fhir/ksa/nphies-
fs/StructureDefinition/extension-transfer",
         "valueBoolean": true
   }
]
```

7.4.2 Authorization Examples

Below is the list of possible scenarios of Authorization use case:

Use Case	Scenarios	Action
Prior Authorization Use Case	The prior authorization reference issued with the original authorization response reported under "ClaimResponse.preAuthRef" field, e.g., AGB126TH, does not change, that is, the same prior authorization reference string shall be returned on responses to restatements of the original authorization.	
Cancel an Unused Prior Authorization	Prior Authorization - none of the amount is consumed. Example: The patient wants to receive services from a different provider. The first HCP cancels the existing Prior Authorization. Then the beneficiary can go to a different HCP who will be able to submit a new Prior Authorization.	Submit a 'cancel-request' where Task.focus = Business Identifier of original authorization (claim)
Cancel a Partially used Prior Authorization	Prior Authorization - some services have been provided Example: The treatment has concluded or the patient wishes to change providers. The HCP submits a new Prior Authorization containing only the services already provided	Submit an 'authorization-request' where Claim.related.claim = Business Identifier of original authorization (claim) claim.related.relationship = 'prior'

	and does not include the services that are not going to be performed.	
Modify an existing Prior Authorization	Prior Authorization restatement - change the services being authorized Example: Add or remove services, changes the services to match those actual performed during an encounter or surgery. The HCP submits a new Prior Authorization containing only the services planned or already provided and does not include the services that are not going to be performed.	Submit an 'authorization-request' where Claim.related.claim = Business Identifier of original authorization (claim) claim.related.relationship = 'prior'

Table 33: Authorization Use Case Scenarios

7.5 Request Claim Supporting Documents

This use case enables the HICs to request supporting document(s) for a specified transaction to support business processes such as adjudication.

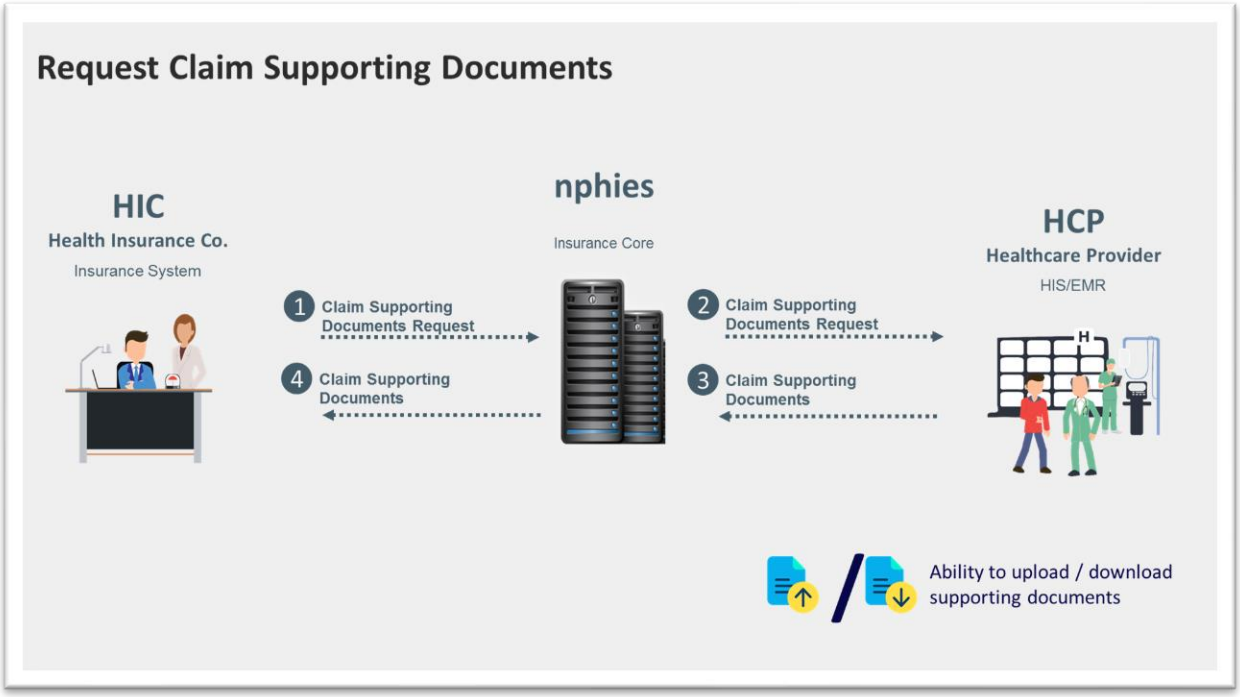


Figure 13: Request Claim Supporting Documents

7.6 Cancel Authorization Service

This use case enables the HCP to send cancel Authorization to HIC

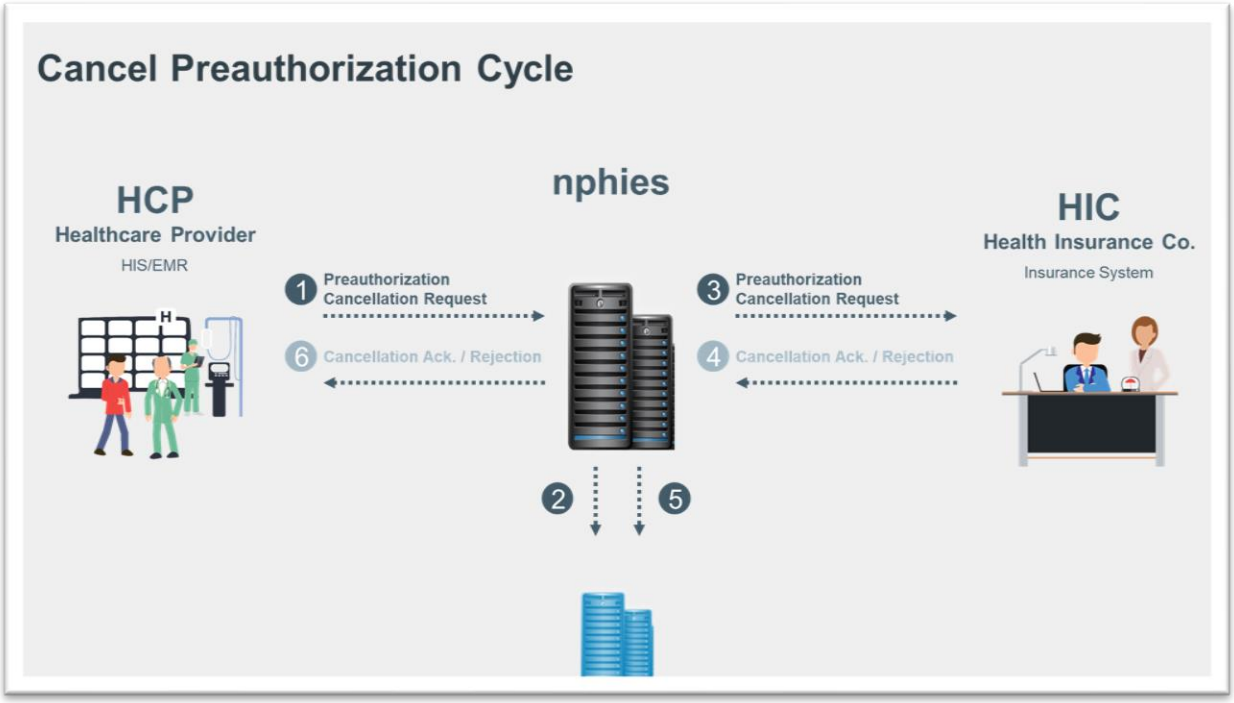


Figure 14: Cancel Authorization Service

7.7 Cancel Claim Request

This use case enables HCP to send Nullify/ Cancel Claim Request to HIC.

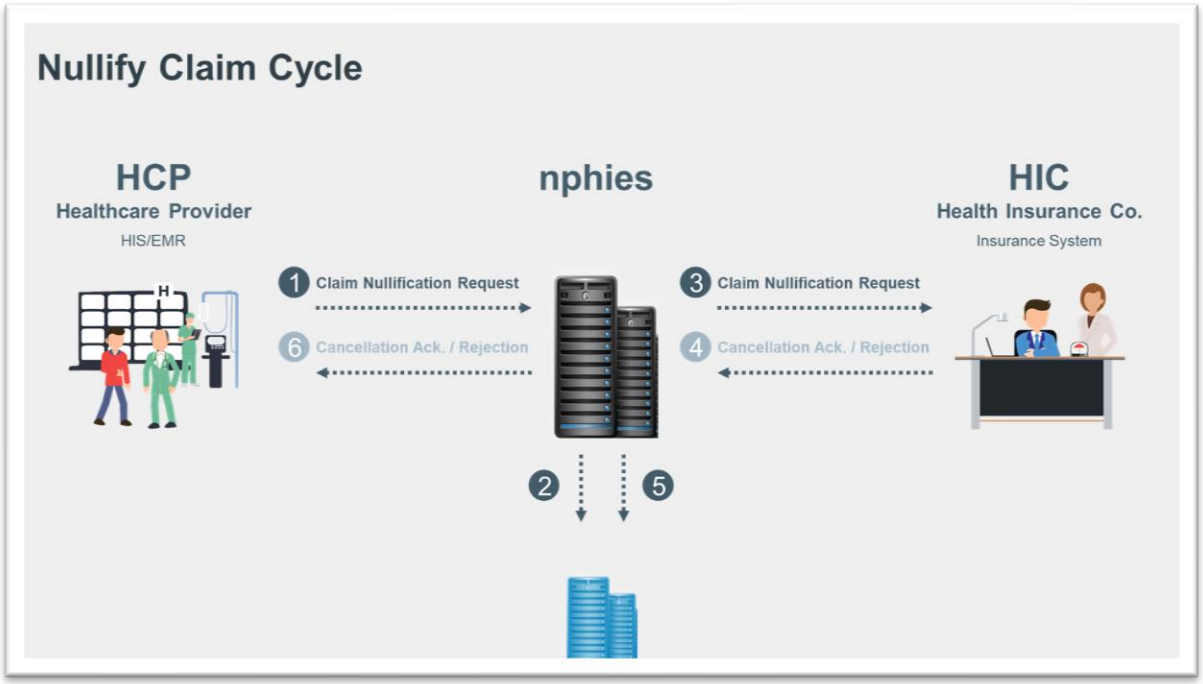


Figure 15: Nullify/ Cancel Claim Request

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King Fahd Road, Al Malqa, Riyadh 13524

EMAIL:
CALL CENTER: 92 000 4299
WEBSITE: NPHIES.sa

7.8 Payment Reconciliation

This use case enables HIC to send the payment advice (Payment Reconciliation) to the HCP.

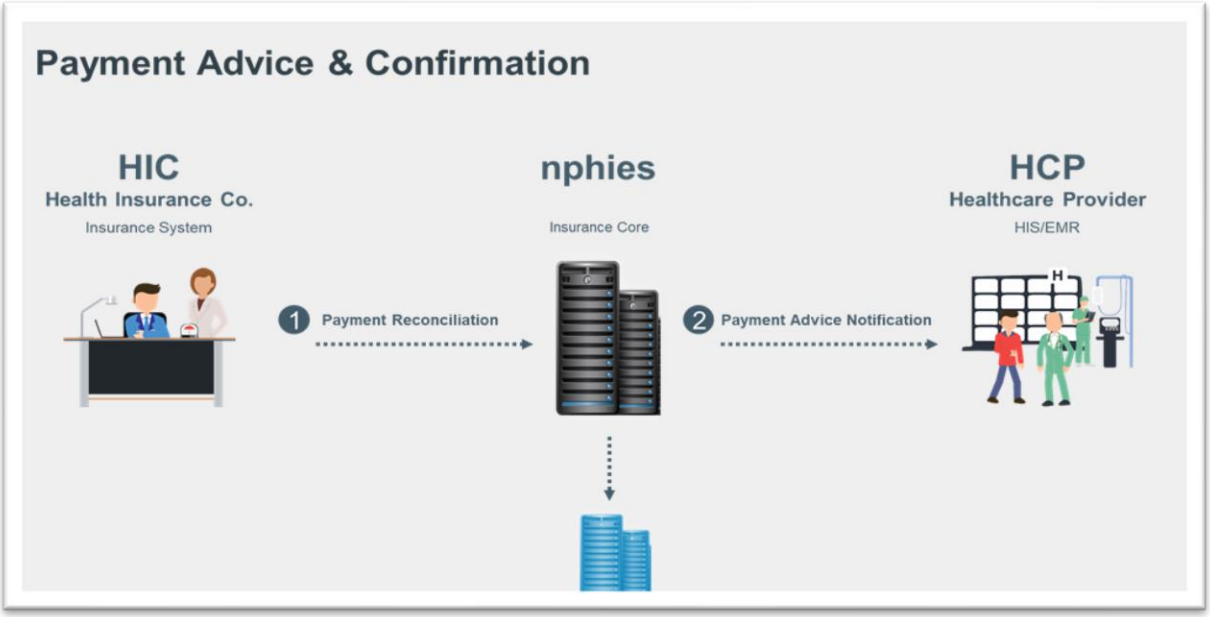

Figure 16: Payment Reconciliation

7.9 Payment Confirmation Notification

- This use case enables HCP to send the payment confirmation to the NPHIES
- Payment Confirmation Notification Service will have the ability to link to an existing payment advice notification

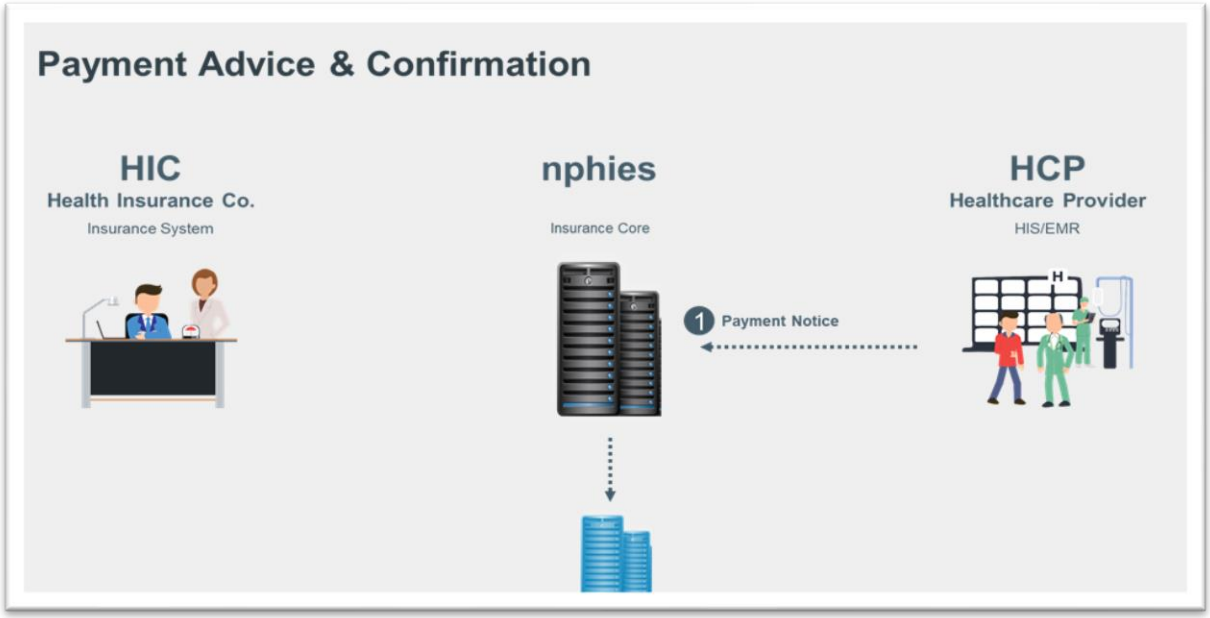

Figure 17: Payment Confirmation Notification

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EMAIL:
CALL CENTER: 92 000 4299
WEBSITE: NPHIES.sa

8 SCENARIOS

The example scenarios will explain how different healthcare stakeholders will utilize the Financial transactions. These will also help user in understanding the combination of use cases mentioned in Section 7.

Note:

1. Refer to the Reference Implementation Guide for Scenarios including Actors and Encounters

2. Refer to the Community Portal (https://cportal.Nphies.sa/#/JHD/documentation) for Sample Messages

9 DATA MODEL

Following FHIR Resources will be used to compose data models for information exchange:

- CoverageEligibilityRequest
- CoverageEligibilityResponse
- Authorization
- Authorization Response
- Claim
- ClaimResponse
- Communication Request
- Communication Response
- Patient
- Coverage
- Organization Payer
- Organization Provider
- Practitioner
- Practitioner Role
- Encounter
- Payment Reconciliation
- Payment Notice
- VisionPrescription
- Location
- Task

The section below provides the breakdown of message structures including information about:

- **Field Name** – The path (Name) of the field (Element) as per FHIR R4 based profile in addition to extensions added to accommodate the localized NPHIES datasets

- **Type** – Value Type as per standard FHIR R4 data element types

- **Card.** – Cardinality of the elements indicating the no. of instances mentioned in the table. Refer to Section 3.2 Cardinality

- **Description** – Text description of the element

- **ValueSet** – The binding ValueSet referring to the CodeSystem and codes allowed for any fields of type CodeableConcepts

Profile Table's Structure is illustrated in the shown image below:

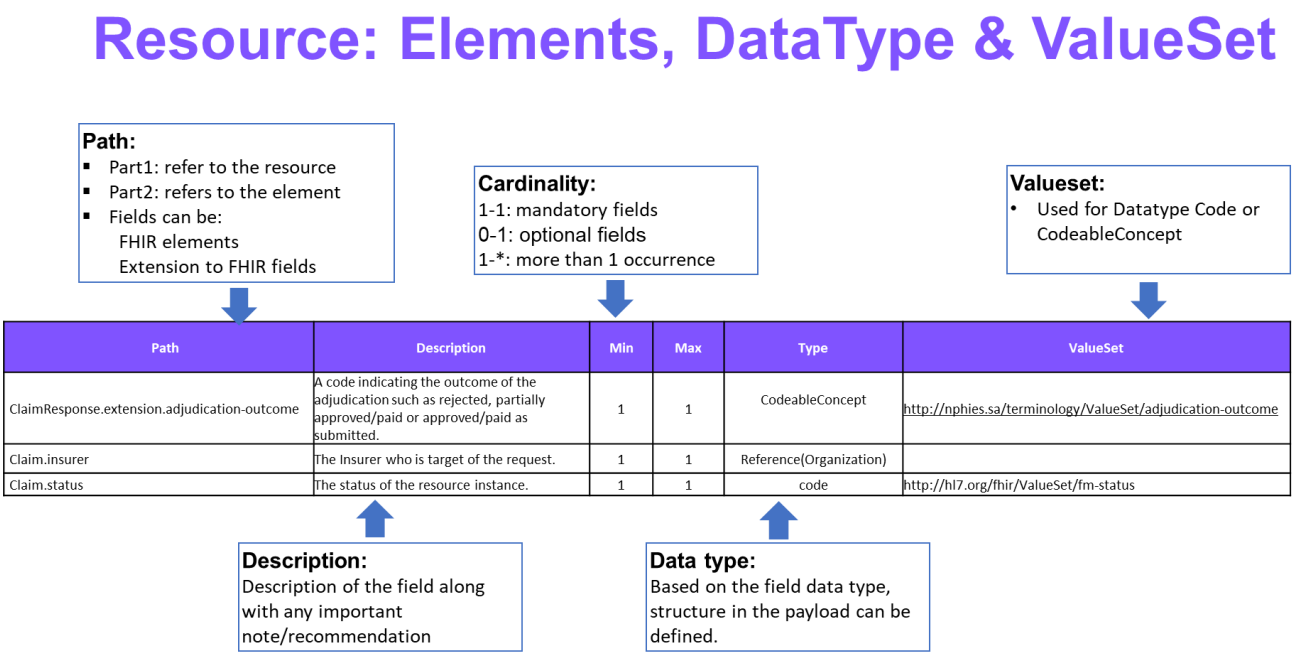

Figure 18: Profile Tables' Structure

9.1 CoverageEligibilityRequest

Eligibility requests enable the HCPs to verify the beneficiary's insurance coverage benefit plans which makes them eligible to receive healthcare services at the given facility. CoverageEligiblityRequest is created using Message Bundle. All related resources must be in the same bundle.

9.1.1 Input

Only HCPs will be able to perform this action.

9.1.1.1 Message Structure: Coverage Eligibility Request

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.1.1.2 Sample Message: CoverageEligibilityRequest

Data Elements
Refer to the Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 34: Sample Message: Coverage Eligibility Request

9.2 CoverageEligibilityResponse

HICs respond to the eligibility request in the form of eligibility response stating whether the included insurance plan, or that located by the insurer, is active as of the requested date and from which the provider can determine whether the patient is eligible for reimbursement of healthcare services at the given facility. CoverageEligibilityResponse is created using a Message Bundle. All related resources must be in the same bundle.

9.2.1 Input

Only HICs can perform this action.

9.2.1.1 Message Structure: Coverage Eligibility Response

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.2.1.2 Sample Message: CoverageEligibilityResponse

Data Elements
Refer to the Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 35: Sample Message: Coverage Eligibility Response

9.3 Authorization

The business process enables the HCP to obtain a prior authorization from the HIC for reimbursement for the delivery of specific services and treatment to be provided to the beneficiary. Authorization typically represents a guarantee of payment for the referenced services. Authorization Request is created through Message Bundle. All related resources must be in the same bundle. There are 5 types of authorization profiles:

1. Institutional
2. Professional
3. Pharmacy
4. Dental
5. Vision

9.3.1 Input

Only HCPs will be able to perform this action.

9.3.1.1 Authorization – Institutional

An implementation profile of the Saudi Claim profile for Institutional Prior Authorizations.

Message Structure: Authorization Profile – Institutional

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.3.1.2 Authorization – Professional

An implementation profile of the Saudi Claim profile for Professional Prior Authorizations (e.g. medical, rehabilitative, allied professionals).

Message Structure: Authorization Profile – Professional

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.3.1.3 Authorization – Pharmacy

An implementation profile of the Saudi Claim profile for Outpatient Pharmacy Prior Authorizations.

Message Structure: Authorization Profile – Pharmacy

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.3.1.4 Authorization – Dental

An implementation profile of the Saudi Claim profile for Outpatient Dental Prior Authorizations.

Message Structure: Authorization Profile – Dental

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.3.1.5 Authorization – Vision

An implementation profile of the Saudi Claim profile for Outpatient Vision Prior Authorizations.

Message Structure: Authorization Profile – Vision

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.3.1.6 Sample Messages: Authorization

Data Elements
Refer to the Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 36: Sample Message: Authorization

The Council of Cooperative Health Insurance
King Fahd Road, Al Malqa, Riyadh 13524

EMAIL:
CALL CENTER: 92 000 4299
WEBSITE: NPHIES.sa

9.4 Authorization Response

HICs respond to the Authorization in the form of authorization response stating whether the patient is authorized to receive healthcare services at the given facility. CreateAuthorizationResponse is created using Message Bundle. All related resources must be in the same bundle.

9.4.1 Input

Only HICs can perform this action.

9.4.1.1 Message Structure: Authorization Response

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.4.1.2 Sample Message: Authorization Response

Data Elements
Refer to the Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 37: Sample Message: Authorization Response

9.5 Claim

Claim transactions enable the HCP to send claim related transactions to the HIC for the reimbursement of the amounts agreed to be covered by the HIC for the delivery of the requested service/ treatment to the beneficiary by the HCP. Claim is created using Message Bundle. All related resources must be in the same bundle. There are 5 types of claim profiles:

1. Institutional
2. Professional
3. Pharmacy
4. Dental
5. Vision

9.5.1 Input

Only HCPs can perform this action.

9.5.1.1 Claim – Institutional

An implementation profile of the Saudi Claim profile for institutional Claims.

Message Structure: Claim Institutional

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.5.1.2 Claim – Professional

An implementation profile of the Saudi Claim profile for Professional Claims (e.g. medical, rehabilitative, allied professionals).

Message Structure: Claim Professional

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.5.1.3 Claim – Pharmacy

An implementation profile of the Saudi Claim profile for Outpatient Pharmacy Claims.

Message Structure: Claim Pharmacy

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.5.1.4 Claim – Dental

An implementation profile of the Saudi Claim profile for Outpatient Dental Claims.

Message Structure: Claim Dental

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.5.1.5 Claim – Vision

An implementation profile of the Saudi Claim profile for Outpatient Vision Claims.

Message Structure: Claim Vision

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.5.1.6 Sample Messages: Claim

Data Elements
Refer to the Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 38: Sample Message: Claim Bundle

The Council of Cooperative Health Insurance
King Fahd Road, Al Malqa, Riyadh 13524

EMAIL:
CALL CENTER: 92 000 4299
WEBSITE: NPHIES.sa

9.6 ClaimResponse

HICs respond to the submitted claims in the form of a claim response to provide the details of the adjudication of the claim with respect to the patient's insurance policy. ClaimResponse is created using Message Bundle. All related resources must be in the same bundle.

9.6.1 Input

A profile of ClaimResponse to provide the response to a Claim request. Only HICs can perform this action.

9.6.1.1 Message Structure: Claim Response

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.6.1.2 Sample Message: Claim Response

Data Elements
Refer to the Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 39: Sample Message: Claim Response Bundle

9.7 Communication Request (Additional Info)

HIC seeks more information from HCP in case any information is missing in the financial transaction such as radiology and laboratory images to support the request from HCP. Communication request is created through Message Bundle. All related resources must be in the same bundle.

9.7.1 Input

Only HICs will be able to perform this action.

9.7.1.1 Message Structure: Communication Request Bundle

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.7.1.2 Sample Message: Communication Request

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 40: Sample Message: Communication Request

9.8 Communication (Additional Info)

HCP will reply to the HIC with supporting information. Communication is created through Message Bundle. All related resources must be in the same bundle.

9.8.1 Input

Only HCPs will be able to perform this action.

9.8.1.1 Message Structure: Communication Bundle

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.8.1.2 Sample Message: Communication Response

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 41: Sample Message: Communication Response

9.9 Patient Profile

A Patient resource for the subject of care.

9.9.1 Input

Only HCPs will be able to perform this action.

9.9.1.1 Structure: Patient Profile

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.9.1.2 Sample Message: Patient Profile

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 42: Sample Message: Patient Profile

9.10 Coverage Profile

A coverage resource for conveying the patient's insurance details, example shown below:

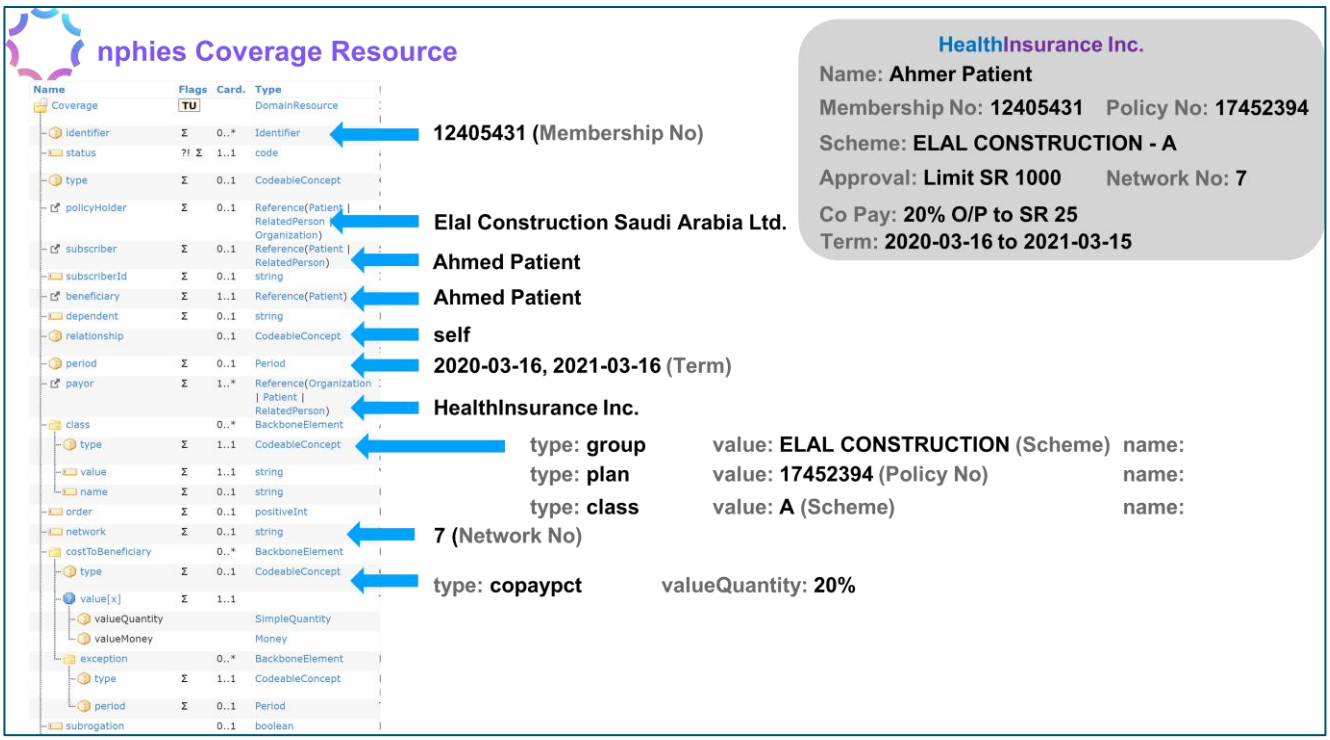

Figure 19: Coverage Resource Example

9.10.1 Input

Both HCPs and HICs will be able to perform this action.

9.10.1.1 Structure: Coverage Profile

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.10.1.2 Sample Message: Coverage Profile

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 43: Sample Message: Coverage Profile

9.11 Organization Payer Profile

An Organization resource for an organization providing healthcare insurance.

9.11.1 Input

Only HICs will be able to perform this action.

9.11.1.1 Structure: Organization Payer Profile

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.11.1.2 Sample Message: Organization Payer Profile

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 44: Sample Message: Organization Payer Profile

9.12 Organization Provider Profile

An Organization resource for an organization providing healthcare services.

9.12.1 Input

Only HCPs will be able to perform this action.

9.12.1.1 Structure: Organization Provider Profile

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.12.1.2 Sample Message: Organization Provider Profile

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 45: Sample Message: Organization Provider Profile

9.13 Practitioner Profile

A Practitioner resource for a person providing healthcare services.

9.13.1 Input

Only HCPs will be able to perform this action.

9.13.1.1 Structure: Practitioner Profile

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.13.1.2 Sample Message: Practitioner Profile

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 46: Sample Message: Practitioner Profile

9.14 Practitioner Role Profile

A profile on PractitionerRole which references the provider (person) working in the context of a provider (organization).

9.14.1 Input

Only HCPs will be able to perform this action.

9.14.1.1 Structure: Practitioner Role

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.14.1.2 Sample Message: Practitioner Role Profile

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 47: Sample Message: Practitioner Role Profile

9.15 Encounter Profile

9.15.1 Input

Only HCPs will be able to perform this action.

9.15.1.1 Structure: Encounter Profile

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.15.1.2 Sample Message: Encounter Profile

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 48: Sample Message: Encounter Profile

9.16 Payment Reconciliation

This is to enable the HIC to notify the appropriate HCP that the payment for adjudicated claim(s) has been submitted by them and provides the details of the payment. PaymentReconciliation is created through Message Bundle. All related resources must be in the same bundle.

9.16.1 Input

Only HICs will be able to perform this action.

9.16.1.1 Message Structure: Payment Reconciliation

A profile of PaymentReconciliation to convey payment and the allocation details of the payment.

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.16.1.2 Sample Message: Payment Reconciliation

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 49: Sample Message: Payment Reconciliation

9.17 Payment Notice

This is to enable the HCP to notify NPHIES that a submitted 'Payment Advice' has been received and payment processed by the HIC. Payment Notice is created through Message Bundle. All related resources must be in the same bundle.

9.17.1 Input

Only HCPs will be able to perform this action.

9.17.1.1 Message Structure: Payment Notice

A profile of Payment Notification to advise that payment has been received.

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.17.1.2 Sample Message: Payment Notice

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 50: Sample Message: Payment Notice

9.18 VisionPrescription Profile

The VisionPrescription resource provides the information requirements for a prescription for glasses and contact lenses for a patient.

9.18.1 Input

HCPs can perform this action.

9.18.1.1 Structure: VisionPrescription Profile

A profile on the VisionPrescription resource.

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.18.1.2 Sample Message: VisionPrescription Profile

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 51: Sample Message: VisionPrescription

9.19 Task Profile

A task resource describes an activity that can be performed and tracks the state of completion of that activity. It is a representation that an activity should be or has been initiated, and eventually, represents the successful or unsuccessful completion of that activity.

9.19.1 Input

HIC and HCP can perform this action.

9.19.1.1 Task Usage

Summary of the values to be used in the Task profile fields for different scenarios.

Task	PollRequest	PollResponse	Cancel Request	Cancel Response	Check-Status Request	Check-Status Response
Task.status	requested	completed, failed	requested	completed, failed	requested	completed, failed

Task.intent	order	order	order	order	order	order
Task.priority	routine	routine	routine	routine	routine	routine
Task.code	poll	poll	cancel, nullify	cancel, nullify	status	status
Task.focus			Required	Required	Required	Required
Task.reasonCode			WI, NP, TAS	WI, NP, TAS		
Task.input						
Task.input.type	include-message-type, exclude-message-type, count, period	include-message-type, exclude-message-type, count, period				
Task.input.value[x]	- if "include-message-type": valueCodeableConcept from the resourceTypes valueSet (http://hl7.org/fhir/ValueSet/resource-types) - if "exclude-message-type": valueCodeableConcept from the resourceTypes valueSet (http://hl7.org/fhir/ValueSet/resource-types) - if "count": integer - if period: Period	- if "include-message-type": valueCodeableConcept from the resourceTypes valueSet (http://hl7.org/fhir/ValueSet/resource-types) - if "exclude-message-type": valueCodeableConcept from the resourceTypes valueSet (http://hl7.org/fhir/ValueSet/resource-types) - if "count": integer - if period: Period				
Task.output						
Task.output.type		error, response		error		error, status
Task.output.value[x]		- if error: valueCodeableConcept - from the adjudication-outcome valueset (http://Nphies.sa/terminology/ValueSet/adjudication-error) - if response - valueReference referencing the Bundle included in the ResponseMessage Bundle		valueCodeableConcept - from the adjudication-outcome valueset		- if error: valueCodeableConcept - from the adjudication-outcome valueset - if status - valueCodeableConcept http://hl7.org/fhir/ValueSet/remittance-outcome
Task.output.valueCodeableConcept.extension.						

Task.output.valueCodeableConcept.extension.expression		if task.output.type = "error"		if task.output.type = "error"		if task.output.type = "error"

Table 52: Task Usage

9.19.1.2 Structure: Task Profile

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.19.1.3 Sample Message: Task Profile

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 53: Sample Message: Task Profile

9.20 Location (Department) Profile

A Location includes both incidental locations (a place which is used for healthcare without prior designation or authorization) and dedicated, formally appointed locations and it can also be used to refer to the department name in the facility.

9.20.1 Input

HIC and HCP can perform the action.

9.20.1.1 Structure: Location (Department) Profile

Refer to the message structure of the transaction from excel file *'Profiles',* available on Community Portal (https://cportal.Nphies.sa/#/JHD/documentation).

9.20.1.2 Sample Message: Location Profile

Data Elements
Refer to Community Portal for sample messages in JSON/XML format (https://cportal.NPHIES.sa/).

Table 54: Sample Message: Location Profile

9.21 Error Codes

The error codes of all the missing fields are listed in the attached excel file for reference.

Error Codes for Missing Fields.xlsx

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SUPPORT INFORMATION:

For any inquiries, recommendations, or complaints, please contact any of the below mentioned email addresses:

- Al-Tamimi, Nour <nal-tamimi@jo.imshealth.com>
- Mansour Al Jundi <dr.aljundi@gmail.com>
- Awal, Melinda <mawal@ae.imshealth.com>
- Abdelrahim, Tarek <TAbdelrahim@ae.imshealth.com>

Please use the format below:

Subject: NPHIES Implementation Guide Document

Body: Please refer to the Section, Page Number, Table, Image related to the provided comment.

We will make sure to revise all comments and needed updates.

Thank you.

Process to address the inquiries, recommendations, or complaints will be:

- CCHI/ Market will send inquiries/ issues details to the account manager. (email addresses listed above in the section)
- Account managers will check if they are able to answer the issue or inquiry
- In case they are not able to do so immediately, they will open ticket on IQIVA service desk and the incident management process will be followed.