

FHIR Structures Using PRSB Headings

Options for Discussion

Published 25th February 2019

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Decision Required

This document is an options paper to show the various options available when using PRSB record headings in a record structure using the FHIR standard. The PRSB headings have been used previously in Transfer of Care and other domains but these were FHIR documents.

For domains such as Maternity Record there is a need to share a structured record which uses the PRSB headings. To enable this to be done the groups of resources used for each PRSB heading need to be carried in a grouping structure somehow in a FHIR resource. The resource used to do this and how it is done is the focus of this document.

Possible “Grouper” FHIR Resources

There are several grouping structures in FHIR with distinct purposes:

- The [List](#) resource - enumerates a flat collection of resources and provides features for managing the collection. While a particular List instance may represent a "snapshot", from a business process perspective, the notion of "list" is dynamic – items are added and removed over time. The List resource references other resources. Lists may be curated and have specific business meaning.
- The [Group](#) resource - defines a group of specific people, animals, devices, etc. by enumerating them, or by describing qualities that group members have. The Group resource refers to other resources, possibly implicitly. Groups are intended to be acted upon or observed as a whole (e.g., performing therapy on a group, calculating risk for a group, etc.). This resource will commonly be used for public health (e.g., describing an at-risk population), clinical trials (e.g., defining a test subject pool) and similar purposes.
- The [Bundle](#) resource - is an infrastructure container for a group of resources. It does not have narrative and is used to group collections of resources for transmission, persistence or processing (e.g., messages, documents, transactions, query responses, etc.). The content of bundles is typically algorithmically determined for a particular exchange or persistence purpose.
- The [Composition](#) resource - defines a set of healthcare-related information that is assembled together into a single logical document that provides a single coherent statement of meaning, establishes its own context and that has clinical attestation with regard to who is making the statement. The Composition resource provides the basic structure of a FHIR [document](#). The full content of the document is expressed using a bundle containing the Composition and its entries.

The Group resource is not suitable as indicated by its description above and is therefore not evaluated in this document.

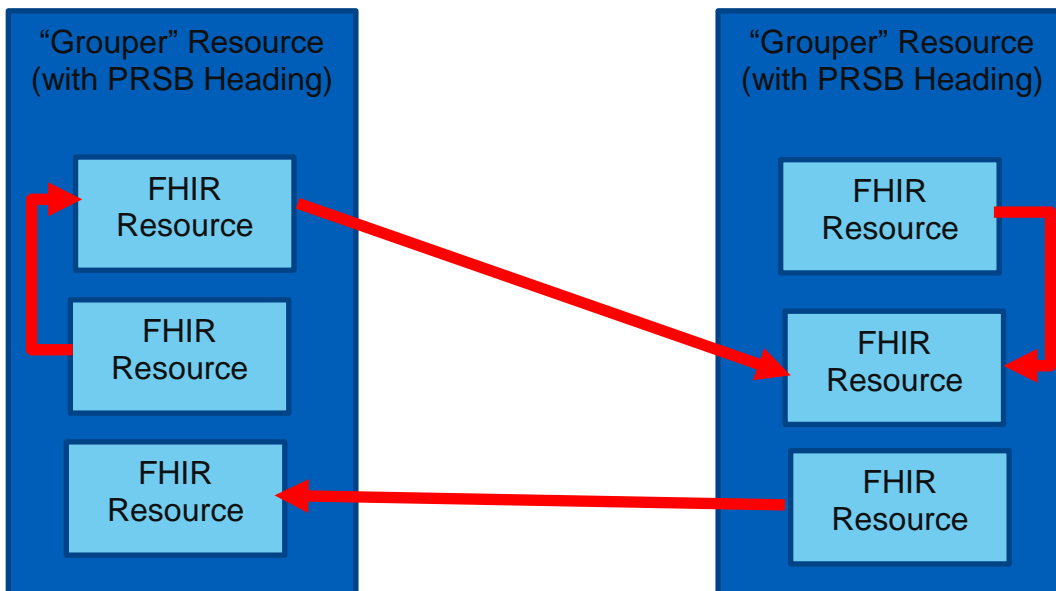
Criteria for the Grouper Resource

Any resource used for the grouping structure must have several properties or functions these are:

1. The resource must allow referencing between resources in the group structure
2. The resource must allow references between grouping structures
3. The resource must be suitable for use as a grouping structure (i.e. one of the above resources)
4. Use of the resource must be FHIR compliant

The grouped structures are to be treated as separate data “objects” in that they can be exchanged, processed, stored and queried as discreet separate structures. The individual grouped structures may be (in most cases will be) wrapped up into a larger data structure for example bundled up into a message or transaction.

Logical Diagram



Option 1 – Bundle Resource

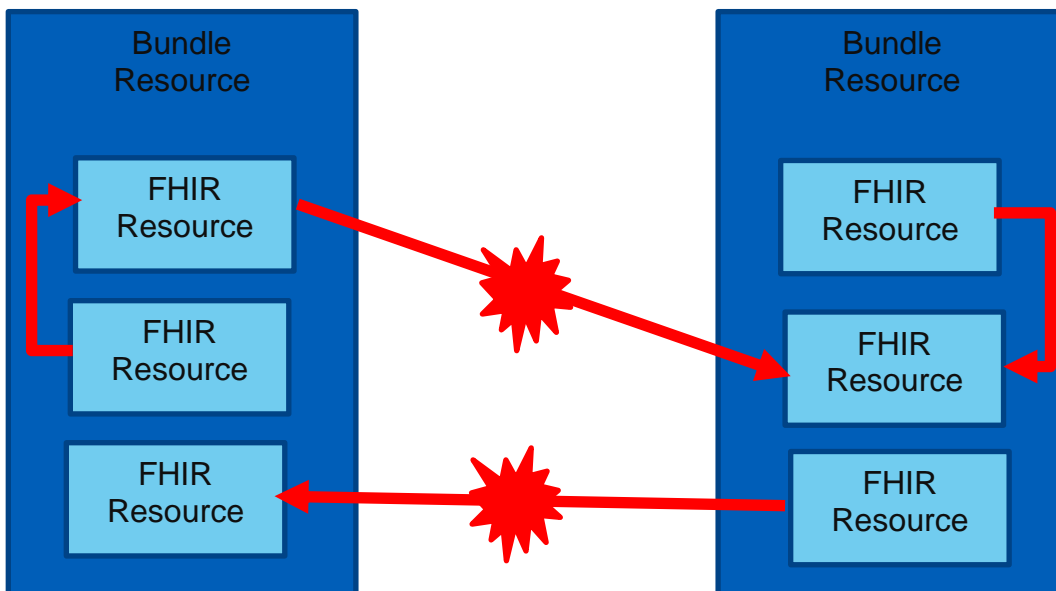
The Bundle resource by definition, seems to be the ideal resource to use as a grouper however there is one big issue, which is that referencing between bundles is not supported. For this reason, the bundle is not a good choice as it would mean that referenced resources would have to be included instead of being referenced. This will mean a lot of duplication of data. For example, the patient resource would have to be included in every grouper that had any resource which referenced patient. For maternity this will mean a full record would duplicate the patient resource between 30 - 35 times. The Bundles will in most cases be carried within an over-arching Bundle and duplicate resources are not allowed in most Bundle types therefore this is not a compliant solution.

Bundle Search Parameters

Search parameters for bundle resource. The [common parameters](#) also apply. See [Searching](#) for more information about searching in REST, messaging, and services.

Name	Type	Description	Expression
composition	reference	The first resource in the bundle, if the bundle type is "document" - this is a composition, and this parameter provides access to searches its contents	Bundle.entry[0].resource (Composition)
identifier	token	Persistent identifier for the bundle	Bundle.identifier
message	reference	The first resource in the bundle, if the bundle type is "message" - this is a message header, and this parameter provides access to search its contents	Bundle.entry[0].resource (MessageHeader)
type	token	document message transaction transaction-response batch batch-response history searchset collection	Bundle.type

Bundle Diagram



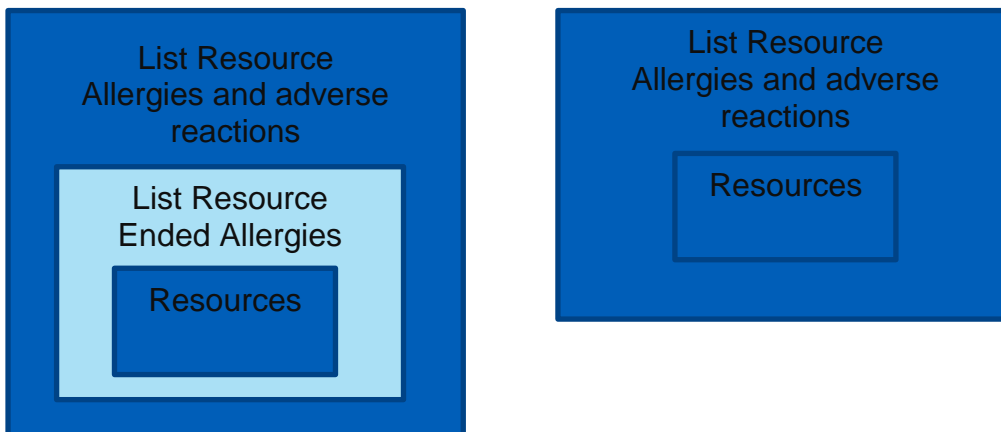
Option 1 - Recommendation

Not suitable as does not meet the criteria see below:

1. The resource must allow referencing between resources in the “grouper”
2. The resource must allow references between the “grouper” resources
3. The resource must be suitable for use as a “grouper”
4. Use of resource must be FHIR compliant – duplicate resources are not allowed in bundles

Option 2 – List Resource

The List resource is suitable as a “Grouper” but some resource structures in other implementations already use a List structure. This means that some headings multiple nested lists. For example, Allergies and adverse reactions will have the PRSB heading List and then another List for the Ended Allergies structures. See an illustration of this below



For consistency the PRSB heading would have to always be the outer List and there must not be duplicate use of the SNOMED concept carried in List.code. Sub-lists would be allowed to align with business requirements.

One requirement of Maternity is to indicate when the information was recorded. List.date will allow this to be done at the PRSB heading.

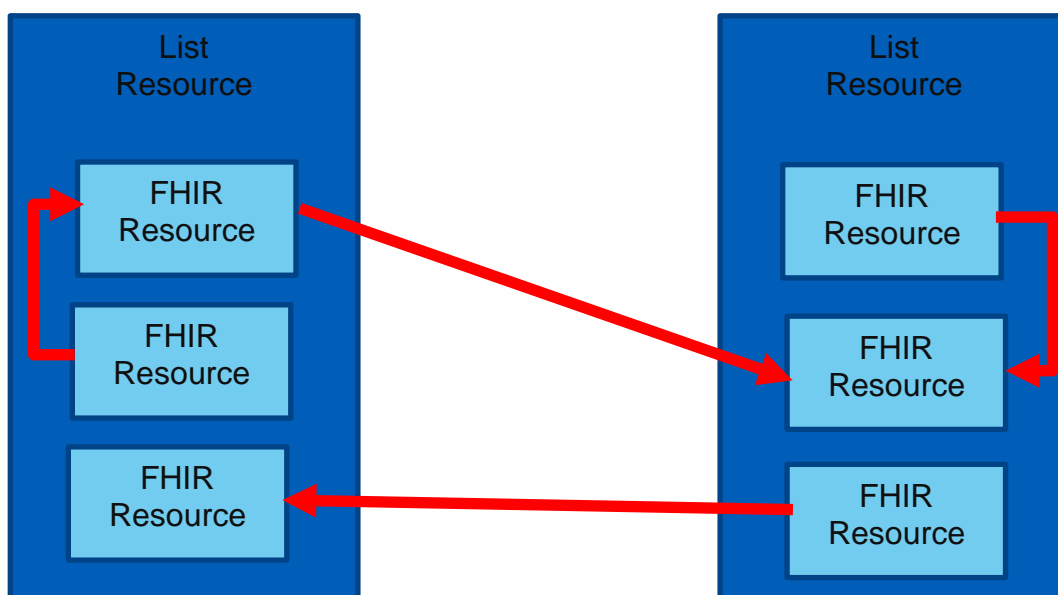
List Resource Search Parameters

Search parameters for the List resource. The [common parameters](#) also apply. See [Searching](#) for more information about searching in REST, messaging, and services.

Name	Type	Description	Expression	In Common
code	token	What the purpose of this list is	List.code	8 Resources
date	date	When the list was prepared	List.date	18 Resources

empty-reason	token	Why list is empty	List.emptyReason	
encounter	reference	Context in which list created	List.encounter (Encounter)	12 Resources
identifier	token	Business identifier	List.identifier	26 Resources
item	reference	Actual entry	List.entry.item (Any)	
notes	string	The annotation - text content	List.note.text	
patient	reference	If all resources have the same subject	List.subject (Patient)	31 Resources
source	reference	Who and/or what defined the list contents (aka Author)	List.source (Practitioner, Device, Patient)	
status	token	current retired entered-in-error	List.status	
subject	reference	If all resources have the same subject	List.subject (Group, Device, Patient, Location)	
title	string	Descriptive name for the list	List.title	

List Resource Diagram



Option 2 - Recommendation

It does meet the criteria see below:

1. The resource must allow referencing between resources in the “grouper”
2. The resource must allow references between the “grouper” resources
3. The resource must be suitable for use as a “grouper”
4. Must be FHIR compliant

The List type is a good fit for the PRSB headings and this is the preferred option.

Option 3 - Composition

The composition resource is normally associated with documents however it can be used as a “grouper”. The fact that a composition is a single piece of attested information means it does not fit well if only one Composition is used because the sections need to be queried and returned separately. This option would use multiple Compositions, one for each PRSB heading. The Composition section does not necessary contain text but references entries which are the resources for the PRSB heading.

The Composition is a good fit to but does have some document “baggage” for example there the Composition mandates some elements, these are :

1. Author – one of practitioner, device, patient or related person
2. Status - Preliminary, final, amended, enter-in-error
3. Date – when edited

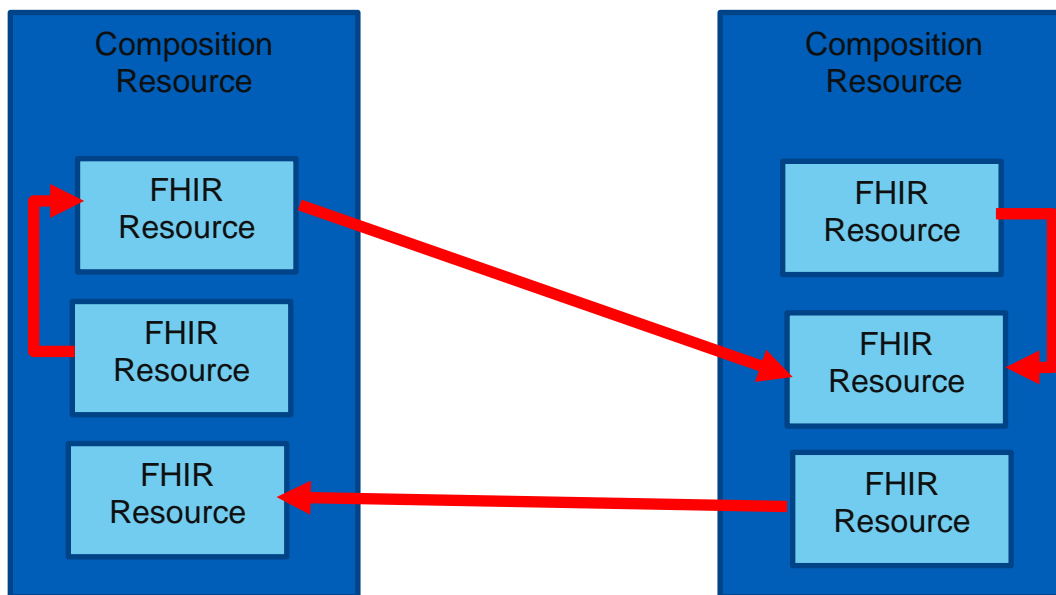
There is a note in the FHIR standard as follows:

Note: [EN 13606](#) uses the term "Composition" to refer to a single commit to an EHR system, and offers some common examples: a composition containing a consultation note, a progress note, a report or a letter, an investigation report, a prescription form or a set of bedside nursing observations. Using Composition for an attested EHR commit is a valid use of the Composition resource, but for FHIR purposes, it would be usual to make more granular updates with individual provenance statements.

This EN 13606 approach is like what is required for PRSB headings.

One of the biggest requirements is to indicate when the information was recorded. This can only be done using multiple compositions as there is no ability to date sections.

Composition Diagram



Search Parameters for Composition

Search parameters for the composition resource. The [common parameters](#) also apply. See [Searching](#) for more information about searching in REST, messaging, and services.

Name	Type	Description	Expression
attester	reference	Who attested the composition	Composition.attester.party (Practitioner , Organization , Patient)
author	reference	Who and/or what authored the composition	Composition.author (Practitioner , Device , Patient , RelatedPerson)
class	token	Categorization of Composition	Composition.class
confidentiality	token	As defined by affinity domain	Composition.confidentiality
context	token	Code(s) that apply to the event being documented	Composition.event.code
date	date	Composition editing time	Composition.date

encounter	reference	Context of the Composition	Composition.encounter (Encounter)
entry	reference	A reference to data that supports this section	Composition.section.entry (Any)
identifier	token	Logical identifier of composition (version-independent)	Composition.identifier
patient	reference	Who and/or what the composition is about	Composition.subject (Patient)
period	date	The period covered by the documentation	Composition.event.period
related-id	token	Target of the relationship	Composition.relatesTo.target.as(Identifier)
related-ref	reference	Target of the relationship	Composition.relatesTo.target.as(Reference) (Composition)
section	token	Classification of section (recommended)	Composition.section.code
status	token	preliminary final amended entered-in-error	Composition.status
subject	reference	Who and/or what the composition is about	Composition.subject (Any)
title	string	Human Readable name/title	Composition.title
type	token	Kind of composition (LOINC if possible)	Composition.type

Option 3 – Recommendation

It does meet the criteria see below:

1. The resource must allow referencing between resources in the “grouper”
2. The resource must allow references between the “grouper” resources
3. The resource must be suitable for use as a “grouper”
4. Must be FHIR compliant

The Composition is suitable for use as a grouper for PRSB headings, but it is not without challenges due to its document nature. It is the recommendation that List is a better fit than Composition.