NHS Scotland
Medication Content Models:
3. Medication Archetypes

Version History

Date	Version	Status	Author	Comment
6 Mar 2012	0.2	draft	Ian McNicoll	

Content Editors

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Content Reviewers

Contents

1.1 Introduction for Archetype Reviewers

For those new to clinical content reviewing, the following introduction may be helpful.

The intention is to define the structure and content of aspects of a patient medication record for sharing across all clinical settings and the widest possible range of clinical practitioners, and indeed, patients and carers. They are not trying to determine exactly **what**, or **if**, needs to be recorded by any specific clinician or in any particular clinical setting, but to define **how** the information should be recorded. We are also not trying to define what actually appears in a form or screen but the shared information structures underpinning them.

By involving a very wide clinical audience we take advantage of 'crowd-sourcing' to establish both inadvertent duplication of effort which will hamper sharing information and legitimate local variation. This is also the way that differences in approach can be discussed and resolved. This process can take a little time but does create models that can be re-used right across the service.

This inclusive approach does mean that when an archetype is reviewed, you may find that a number of the elements appear unnecessary if irrelevant to your particular clinical setting or role. Feel free to ignore these items and concentrate on those which are of interest or importance in your field.

In practice, the archetypes are normally used in 'templates' where they are adjusted for specific clinical settings or purposes by hiding elements that are not needed or making others mandatory.

The role of a reviewer is to identify any gaps, errors or incorrect assumptions in the models, based on your skills, interest and experience. It would also be nice to know when they seem to be correct!

Medication is a complex area - feel free to ask questions as part of your review comments if some aspects are unclear or unfamiliar.

Once the first round of review comments have been received the models will be adjusted and you will be asked to review them again over a few review cycles until a good degree of consensus is reached amongst the reviewers at which point they will be formally published and regarded as fit to be used in real systems.

1.2 Background

The Medication Content Model is intended to capture the clinical recording and messaging requirements associated with medications, prescribing and allergies in a community/ outpatient setting.

Because of some fundamental differences between community and hospital prescribing practice, hospital prescribing is deliberately outside the scope of this work though input is welcome from secondary care practitioners as to how well the models support transitions of care such as admission and discharge, particularly medicines reconciliation.

1.2.1 Product vs. Dose-based prescribing

The models currently only support 'Product-based' prescribing which is the norm in GP and community practice, whereas 'Dose-based' prescribing is usual in hospital practice.

1.2.1.1 Dose-based prescribing

"Citalopram, oral, 20 mg, 8am"

The prescription specifies the medication name, route, dose strength and frequency but leaves the choice of exact 'product' to the administering or dispensing clinician.

Dose-based prescribing generally uses dm+d 'Virtual Therapeutic Moiety' (VTM) codes.

1.2.1.2 Product-based prescribing

"Citalopram tabs 20mg, 1 tab daily"

The prescription specifies the exact product (generic or proprietary), including name and formulation, and the dosage/frequency is normally expressed as a single statement. Route is generally omitted or included as part of the dosage instruction

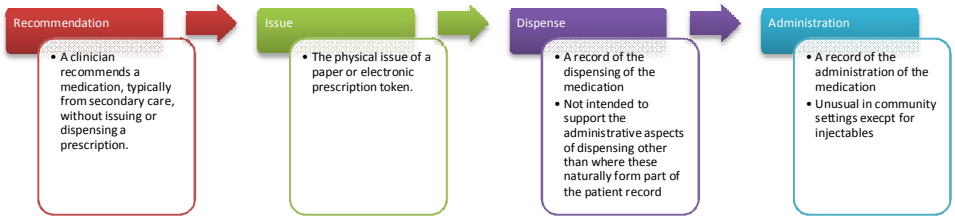
Product-based prescribing uses dm+d 'Virtual Medicinal Product ' (VTM) or codes or 'Actual Medicinal Product ' (VTM) codes, which carry both medication name and form.

1.2.2 The GP/community prescribing process

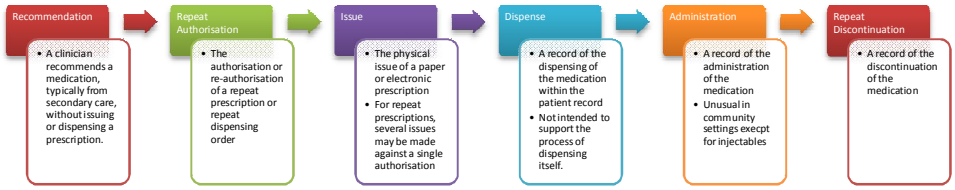
Since the models are intended to reflect the process of prescribing and administration in GP and community systems, they must support all aspects, including recommendations/advice, acute and repeat prescribing, dispensing and administration.

The CfH GP2GP project defines the following aspects of the prescription process within a patient record …

I. Acute, one-off prescriptions



II. Repeat prescriptions



Some of these steps may initially seem unfamiliar to clinicians since current prescribing systems often hide the complexity e.g. an initial Repeat prescription is a combination of Authorisation (number of repeats / Quantity) and an Issue. Similarly in an Emergency Care Summary, a recent repeat prescription list may contain a mixture of information from various repeat authorisations, issues and a discontinuation, to express Date Started, Date stopped and for example First and Last Issue Dates.

iii. Reported medication

A specific **Reported Medication Entry** is needed to record non-prescribed medications e.g. Over-the-counter or historical medications reported by a patient or other 3rd party but not part of the current medication process.

1.2.3 Other clinical settings

Although this first draft of the models only supports the GP prescribing model, other community settings do have to be considered such as Nursing homes, Mental health settings and Prison service, where other processes, possibly more akin to hospital practice may be more appropriate.

One other possibility to consider is whether dose-based prescribing should be supported for Recommendations originating in secondary care.

1.3 Medication Archetypes

The models are expressed as a set of 'archetypes' each of which is "a computable definition of a single discrete clinical concept" in an electronic patient record such as 'blood pressure', 'diagnosis' or, in this case, 'medication issue (prescription)', 'medication administration' etc.

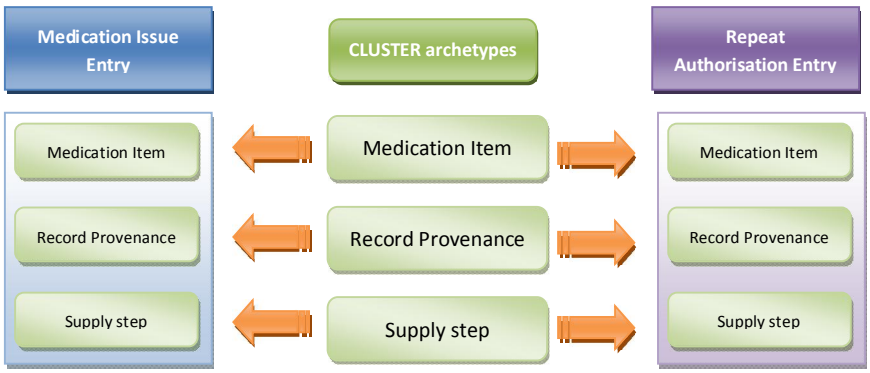
Each defines a simple structure and the codes or terms allowed within.

1.3.1 Record Entry vs. Cluster archetypes

The key medication archetypes are **Record Entries**, one for each of the medication steps above i.e. ***Recommendation***, ***Issue, Dispensing*** etc and which represent standalone, meaningful clinical statements.

e.g. *'The patient was prescribed Citalopram 20mg 1 tab daily, 28 tabs, on 12-feb-2012 by Dr Thomas'*

There is also a set of **Cluster** archetypes, sub-components which are re-used inside various Record Entries e.g. ***Medication Item*** is re-used within a number of the Entries, including ***Recommended Medication*** and ***Issued Medication***.



1.4 Medication Cluster archetypes

Cluster archetypes are only ever used inside Record Entry archetypes. They represent smaller sub-components or 'fragments' which can be re-used within a number of different Record Entries but do not by themselves represent meaningful clinical statements.

1.4.1 Medication Item

The Medication Item Cluster records details of a medication product, dosage and administration instructions. The model is closely aligned with the dm+d, CfH Dose syntax and GP2GP medication models but is currently restricted to supporting a 'product-based' approach to prescribing, as used in community settings e.g. "Citalopram tab 20mg, 1 tab daily", and excludes the 'dose-based' prescribing approach used in hospitals e.g. "Citalopram, oral, 20 mg once daily".

Medication Item		CLUSTER.MedicationItem.v1.1.1draft
Element	**Description / Notes**	**Technical / Termset**
Medication Name	**Mandatory** medication name, form and strength, coded using dm+d terms where possible, allowing plain text for historical or patient reported items	MedicationName CD **1..1**
	e.g."Citalopram tab 20mg" or *Consider CUI display formatting*	*dm+d VMP,AMP,VTM terms preferred.*
Route	Optional medication route, using SNOMED terms where possible. Not generally applicable to product-based medication.	Route CD
	e.g. "Oral"	*SNOMED Routes termset*
Dosage Instructions	Multiple dosage and administration instructions, including Dose, Frequency and Site. Currently expressed as plain text but the ED datatype allows for more complex structured instructions using the CfH Dose Syntax	DosageInstructions ED 0..*
	e.g. "I tablet at night" or "20mg at 10pm"	
Additional Instructions	Multiple additional dosage or administration instructions as plain text.	AdditionalInstructions ST 0 .. *
	e.g. "Omit morning dose on day of procedure"	
Dispensing Instructions	Multiple plain/structured text to record complex dispensing arrangements, particularly for Controlled Drug instalment dispensing.	DispensingInstructions ED 0..*
	e.g. "Dispense weekly"	
Controlled Drug Schedule	The internal dm+d number indicating the controlled Drug schedule which applies to this medication.	ControlledDrugSchedule INT
	e.g. "0" = No controlled drug status	*0 = No controlled drug status* *1 = Schedule 1 (CD Lic)* *2 = Schedule 2 (CD)* *3 = Schedule 2 (CD Exempt Safe Custody)* *4 = Schedule 3 (CD No Register)* *5 = Schedule 3 (CD No Register Exempt Safe Custody)*

Comment [IMcN1]: Should form and strength be expressed in separate elements to support VTM "hospital" prescribing

Comment [IMcN2]: Should CUI Medication Line formatting be recommended?

Comment [IMcN3]: Should Dose, Frequency, Site be pulled out as separate specific elements? Requires discussion with dm+d / CUI experts

Comment [IMcN4]: e-Pharmacy requires the textual version to be sent. Do we need to add this to the content model?

		6 = Schedule 3 (CD No Register Phenobarbital) *7 = Schedule 3 (CD No Register Temazepam)* *8 = Schedule 4 (CD Anab)* *9 = Schedule 4 (CD Benz)* *10 = Schedule 5 (CD Inv)*
Batch Number	The batch number, in plain text, of the medication administered. Used only in Administered Medication *e.g. "Lot No : LA56-6"*	BatchNumber ST
Expiration Date	The expiration date of the medication administered, Used only in Administered Medication. Partial dates allowed. *e.g. "May 2012"*	ExpirationDate TS
Comment	An additional free text comment about the medication item.	Comment ST

Used in

Recommended Medication Entry, Reported Medication Entry, Repeat Authorised Medication Entry, Issued Medication Entry, Administered Medication Entry, Dispensed Medication Entry, Discontinued Medication Entry

1.4.2 Medication Action Step

Within each Medication entry records details of a particular step or stage in the medication prescribing process, including the date/time at which the step was taken. In Summary Extracts it is common to require very specific steps to be identified e.g. 'Last Issued' and the Specific Action Step element would be used to 'overlay' the name of the 'Issued' step in this case.

Medication Action Step	CLUSTER.MedicationSupply.v1.1.1draft	
Element	**Description / Notes**	**Technical / Terms**
Action Step Time	**Mandatory** date and optional time that the medication action step was taken. Partial dates are allowed. *e.g. "01-Feb-2009"* *Display in CUI format e.g. "Feb-2012"*	ActionStepTime TS **1..1**
Action Step	A Mandatory code describing the action being recorded within a medication entry. *The combined Action Step time and Step may be displayed as e.g. "Date Administered: 01-Feb-2009"*	ActionStep CV/CNE **1.1** *Recommended, Reported, Authorised, Issued, Administered, Dispensed, Discontinued;*
Specific Action Step	A code describing a specific Action Step, normally used when a summary of medication actions is being constructed. Where a specific action step is not provided the Action Step code should be used for display *The combined Action Step time and Specific Step may be displayed as e.g. "Date Last Administered: 01-Feb-2009"*	SpecificActionStep CV/CNE *First Recommended, First Authorised, Last Authorised, First Issued, Last Issued, First Administered, Last*

		Administered, First Dispensed, Last Dispensed
Recommended Medication Link	A link back to the 'master' recommendation record or to the original Recommendation if this is a Recommendation which has superceded another. *Not required in a 'Summary extract' context*	RecommendedMedicationLink LINK

Used in

Recommended Medication Entry, Reported Medication Entry, Repeat Authorised Medication Entry, Issued Medication Entry, Administered Medication Entry, Dispensed Medication Entry, Discontinued Medication Entry

1.4.3 Medication Supply Step

Records differing steps of 'supply' of the medication to the patient, 'supply' covering repeat authorisation, prescription issue, administration and dispensing of the medication.

Medication Supply Step	CLUSTER.MedicationSupplyStep.v1.1.1draft

Element	Description / Notes	Technical / Terms
Supply Action Step	The **mandatory** date and action of the medication supply. *See Medication Action Step*	MedicationActionStep CLUSTER **1..1**
Performer	The person performing the Medication supply if this differs from the clinical Author of the parent ENTRY.	Performer PARTY
Date Supplied	The date that the action step was performed, if this differs from the Date Recorded of the parent ENTRY *Display in CUI format e.g. "21-Feb-2012"*	DatePerformed TS
Supply Contract	A coded value describing the kind of 'contract' in place under which the medication was supplied. *e.g."ACBS" or "Private"* *Assume "Standard" as default*	SupplyContract CV/CNE **1..1** *Standard; OTC; Contraceptive; SLS; ACBS; Assorted Flavours; Private*
Quantity Supplied	The quantity of medication authorised, issued, administered or dispensed. *Includes quantity and units/dose unitse.g. "60 tabs" or "500 mls'*	QuantitySupplied PQ
Quantity Dispensed Description	Quantity dispensed, with amount in text form, to comply with Controlled Drug legislation. *e.g. "Sixty tabs" or "Five hundred mls*	QuantityDispensedDescription ST

Used in

Repeat Authorised Medication Entry, Issued Medication Entry, Administered Medication Entry, Dispensed Medication Entry

Comment [IMcN5]: Does this cover all UK supply contracts?

Comment [IMcN6]: Is this required in the content model, or just a feature of e-Pharmacy messages?

1.4.4 Record Provenance

The Record Provenance cluster records the and source of the information and other medico-legal details for every Entry. This helps the clinician to understand the clinical provenance of any item appearing in the patient record.

Record Provenance	CLUSTER.RecordProvenance.v1.1.1draft
Element	**Description / Notes**	**Technical / Termset**
Information Source	The technical feed / message / webservice from where the information was sourced. For human interpretation only. *e.g. "ECS", "KIS", "SCI-GW", "NDS", "Patient", ""*	InformationSource ST
Author	The clinical author of the information supplied (including patient or other 3rd party). This is not necessarily the person physically committing the record and in some cases may be a group or organisation rather than an individual. *e.g. "Dr I Wilson" .*	Author PARTY
Care Setting	The care setting in which the information was obtained. *e.g. "GP", "Rheumatology Outpatients".* *Consider use of coded Care Settings*	CareSetting ST
Date Recorded	The date at which the information was recorded i.e committed. *e.g. "02-Feb-2012"* *Use CUI date formatting in displays*	DateRecorded *availabilityTime in HL7v3*
Used in	Recommended Medication Entry, Reported Medication Entry, Repeat Authorised Medication Entry, Issued Medication Entry, Administered Medication Entry, Dispensed Medication Entry, Discontinued Medication Entry	

Comment [IMcN7]: Can the Document Indexing Care Settings codes be used for this purpose?

1.5 Medication Entry Record archetypes

Medication Entry Records represent authored 'clinical statements' in the patient record and if carried in a Primary Extract, **must** carry provenance details of the author, date recorded etc.

1.5.1 Recommended Medication Entry

The Recommended Medication Entry records details of a medication which has been recommended by a clinician e.g. as a part of a hospital discharge.

Recommended Medication Entry	ENTRY.RecommendedMedication.v1.1.1draft
Element	**Description / Notes**	**Technical / Termset**
Provenance	The provenance of the information in this Entry, including author, date recorded and care setting, mandatory in primary extracts. *See Record Provenance for details*	Provenance CLUSTER.RecordProvenance

Action Step	Details of the Action Step taken, in this case, "Recommended", including the date at which the medication was recommended. *See Medication Action Step for details*	ActionStep CLUSTER.MedicationAction Step **1..1**
Recommended Medication	The medication item(s) recommended, including medication name, form, strength and dosage instructions. *e.g. "Trimethoprim tabs 200 mg once daily"* *See Medication Item for details*	RecommendedMedication CLUSTER.MedicationItem **1..***
Recommended Action	The recommended action for the medication. *e.g. "Stop"*	RecommendationAction CV/CNE **1..1** *Commence,Continue,Stop, Withhold, Amend, Not Current*
Priority	The urgency or priority with which the medication should be commenced. *e.g. "High"* *The default is 'Normal'*	Priority CV/CNE *GP2GP::EHRMedicationPriority: Normal,High,Immediate*
Recommended Period	The start date, end date or duration for which the recommendation is valid e.g. for which this medication is continued or withheld *e.g. "01-Feb- 2012 to 08-Feb-2012" or "7 days"*	RecommendedPeriod IVL <TS> *Handles start date, end date and duration*
Indefinite Period Recommended	Set to 'True' if it is recommended that the medication is used indefinitely. *e.g. "True"*	IndefinitePeriodRecommended BL
Recommendation Reason	The clinical reason(s) for recommending the medication, either as coded text or links to a different Entry record where this information is located. *e.g. "Essential hypertension"* *Needs further discussion*	RecommendationReason LINK / CD 0..* *SNOMED terms preferred.*

Comment [IMcN8]: GP2GP allows for multiple items. Is this required or should item require a separate Entry?

1.5.2 Reported Medication Entry

The Reported Medication Entry records medication details where the information is reported by a patient or 3rd party and not derived directly from the patient's current, ongoing medication order process.

Reported Medication Entry	ENTRY.ReportedMedication.v1.1.1draft	
Element	**Description / Notes**	**Technical / Termset**
Provenance	The provenance of the information in this Entry, including author, date recorded and care setting, mandatory in primary extracts. *See Record Provenance for details*	Provenance CLUSTER.RecordProvenance
Reported Medication	Mandatory description of the reported medication item(s), including medication name, form, strength and dosage instructions, although	ReportedMedication CLUSTER.MedicationItem **1..***

Comment [IMcN9]: Should each reported item require a separate Record Entry.

	for Reported medication only medication name or even approximate name may be all that is available. *e.g. "Beta blocker"* *See Medication Item for details*	
Action Step	Details of the Action Step taken, in this case, "Reported", including the date at which the medication use was reported. *See Medication Action Step for details*	ActionStep CLUSTER.MedicationActionStep **1..1**
Reported Treatment Period	The start date, end date or duration for which this medication was taken. *e.g. "Feb- 2000 to 2012" or "7 days"*	ReportedTreatmentPeriod IVL <TS> *Handles start date, end date and duration*

1.5.3 Repeat Authorised Medication Entry

The Repeat Authorised Medication entry records details of authorisation or re-authorisation of repeat prescribing/dispensing of a medication.

Repeat Authorised Medication Entry		**ENTRY.RepeatAuthorisedMedication.v1.1.1draft**
Element	**Description / Notes**	**Technical / Termset**
Provenance	The provenance of the information in this Entry, including author, date recorded and care setting, mandatory in primary extracts.	Provenance CLUSTER.RecordProvenance
Medication Status	The overall status of the repeat authorisation. *e.g. "Active"* ***Active:** A repeat medication which remains active.* ***Complete:** A repeat medication which was enacted but is no longer active.* ***Cancelled:** A medication which was cancelled before being enacted.* ***Obsolete:** A repeat medication which has been superseded by another and is itself now inactive.*	MedicationStatus CV/CNE **1..1** *GP2GP::EHRMedicationState Active; Complete; Cancelled; Obsolete;*
Action Step	Details of the Action Step taken, in this case, "Authorised", including the date at which the medication was authorised. *See Medication Action Step for details*	ActionStep CLUSTER.MedicationActionStep **1..1**
Supply Step	Details of the Medication Supply Step *See Medication Supply Step for details*	SupplyStep CLUSTER.MedicationSupplyStep **1..1**
Authorised Medication	The medication item(s) authorised, including medication name, form, strength and dosage	AuthorisedMedication CLUSTER.MedicationItem

	instructions. *e.g. "Trimethoprim tabs 200 mg once daily"* *See Medication Item for details*	0..*
Repeat Issues Authorised	The number of repeat issues which have been authorised. *e.g. "6"*	RepeatIssuesAuthorised INT **1..1**
Repeat Authorisation Period	The start date, end date or duration for which this medication is authorised to be issued. *e.g. "01-Feb- 2012 to 08-Feb-2012" or "7 days"*	RepeatAuthorisationPeriod IVL <TS> **1..1** *Handles start date, end date and duration*
Repeat Authorisation Scheme	The repeat authorisation scheme being used to manage repeat prescribing or dispensing. *e.g. "True"*	RepeatAuthorisationScheme CV;CNE **1..1** *Repeat Prescribing, CMS, EPS, EPS2, Repeat Dispensing*
Dispensing Days Supply	For repeat dispensing, the number of days medication supply recommended to be dispensed at each repeat dispensing issue *e.g. "28"*	DispensingDaysSupply INT .

Comment [IMcN10]: Part of EPS requirement Is this required? Or is it covered by MedicationSupply/QuantitySupplied

1.5.4 Issued Medication Entry

Record details of the issue of a repeat or acute prescription i.e. the prescription 'token' itself, either on-paper or electronically.

Issued Medication Entry	ENTRY.IssuedMedication.v1.1.1draft	
Element	**Description / Notes**	**Technical / Termset**
Provenance	The provenance of the information in this Entry, including author, date recorded and care setting, mandatory in primary extracts. *See Record Provenance for details*	Provenance CLUSTER.RecordProvenance
Action Step	Details of the Action Step taken, in this case, "Issued", including the date at which the medication was issued. *See Medication Action Step for details*	ActionStep CLUSTER.MedicationActionStep **1..1**
Supply Step	Details of the Medication Supply Step taken. *See Medication Supply Step for details*	SupplyStep CLUSTER.MedicationSupplyStep **1..1**
Issued Medication	The medication item issued, including medication name, form, strength and dosage instructions.	IssuedMedication CLUSTER.MedicationItem

	e.g. "Trimethoprim tabs 200 mg once daily" *See Medication Item for details*	
Issue Repeat Number	The number of the repeat issue in the current set of authorised issues. *e.g. "6"*	IssueRepeatNumber INT

Comment [IMcN11]: Consider making this a ratio e.g. 6 / 12 to capture the total number of authorisations.

1.5.5 Administered Medication Entry

The Administered Medication Entry records details of the administration of a repeat or acute prescription. In a general practice settings this would normally only apply to injectables e.g. a vaccination record.

Administered Medication Entry		**ENTRY.AdministeredMedication.v1.1.1draft**
Element	**Description / Notes**	**Technical / Termset**
Provenance	The provenance of the information in this Entry, including author, date recorded and care setting, mandatory in primary extracts. *See Record Provenance for details*	Provenance CLUSTER.RecordProvenance
Action Step	Details of the Action Step taken, in this case, "Administered", including the date at which the medication use was administered. *See Medication Action Step for details*	ActionStep CLUSTER.MedicationActionStep **1..1**
Supply Step	Details of the Medication Supply Step taken. *See Medication Supply Step for details*	SupplyStep CLUSTER.MedicationSupplyStep **1..1**
Administered Medication	The medication item administered, including medication name, form, strength, dosage, route and site, Batch number and Expiry Date. *e.g. "Trimethoprim tabs 200 mg once daily"* *See Medication Item for details*	IssuedMedication CLUSTER.MedicationItem

1.5.6 Dispensed Medication Entry

The Dispensed Medication Entry records details of the dispensing of a repeat or acute prescription. The scope is restricted to that required within a patient record to facilitate medicines management and not to support the dispensing process as such.

Dispensed Medication Entry		**ENTRY.DispensedMedication.v1.1.1draft**
Element	**Description / Notes**	**Technical / Termset**
Provenance	The provenance of the information in this Entry, including author, date recorded and care setting, mandatory in primary extracts. *See Record Provenance for details*	Provenance CLUSTER.RecordProvenance

Action Step	Details of the Action Step taken, in this case, "Dispensed", including the date at which the medication was dispensed. *See Medication Action Step for details*	ActionStep CLUSTER.MedicationActionStep **1..1**
Supply Step	Details of the Supply Step taken. *See Medication Supply Step for details*	SupplyStep CLUSTER.MedicationSupplyStep **1..1**
Dispensed Medication	The medication item administered, including medication name, form, strength, dosage instructions. *e.g. "Trimethoprim tabs 200 mg once daily"* *See Medication Item for details*	DispensedMedication CLUSTER.MedicationItem

1.5.7 Discontinued Medication Entry

Records details of the discontinuation of a repeat prescription which has at some time been issued. The Recommended Medication Entry 'Medication Status' element should simultaneously be set to 'Complete'

When a medicine has been Recommended for indefinite use, or Authorised but has never been issued, a Discontinued Medication Entry is not required, it is sufficient to set its 'Medication Status' to 'Cancelled'.

Discontinued Medication Entry	**ENTRY.DiscontinuedMedication.v1.1.1draft**	
Element	**Description / Notes**	**Technical / Termset**
Provenance	The provenance of the information in this Entry, including author, date recorded and care setting, mandatory in primary extracts. *See Record Provenance for details*	Provenance CLUSTER.RecordProvenance
Action Step	Details of the Action Step taken, in this case, "Discontinued", including the date at which the medication was discontinued. *See Medication Action Step for details*	ActionStep CLUSTER.MedicationActionStep **1..1**
Dispensed Medication	The medication item administered, including medication name, form, strength, dosage instructions. *e.g. "Trimethoprim tabs 200 mg once daily"* *See Medication Item for details*	DispensedMedication CLUSTER.MedicationItem
Recommendation Reason	The clinical reason(s) for discontinuing the medication, either as coded text or links to a different Entry record where this information is located. *e.g. "Nausea"* *Needs further discussion*	DiscontinuationReason LINK / CD 0..* *SNOMED terms preferred.*