Use Cases for linking SNOMED CT and GTINs

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Status: Draft for trial use

Amendment History

Version	Date	Editor	Comments
0.01	20160623	Jane Millar	First draft based on input from experts in New Zealand, UK, Australia and Canada
0.02	20160815	Jane Millar	Including feedback and process diagrams from New Zealand
0.03	20161123	Jane Millar	Incorporating feedback from all 4 countries to ensure understandable by general audience
0.04	20161123	Jane Millar	Reformatting into a document that is sharable and final feedback requested
0.05	20161212	Jane Millar	QA prior to sharing with Steering Group

Approvals

Version	Date	Approver	Comments
0.06	January 2017	SNOMED International/GS1 Project Steering Group	Agreement that the Principles for linking SNOMED CT and GTINs and this Use Case document can be issues as DSTU

Future Review Timetable

Review date	Responsible owner	Comments
YYYYMMDD		Summary of action
		(remove or add rows if necessary)

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1 Introduction

1.1 Purpose

The purpose of this paper is to document the requirements/Use Cases collected from SNOMED International Member countries, GS1 and members of the Expert group established as part of the collaboration between GS1 and SNOMED International to undertake the work for developing Principles/guidelines for linking SNOMED CT and Global Trade Item Numbers (GTINs) for medicinal products.

1.2 Scope

These Use Cases are focused on linking SNOMED CT and GTINs for Medicinal Products and whilst medical devices may be mentioned, they are not part of the Use Case analysis nor the work being undertaken.

1.3 Audience

Those who are undertaking similar work and want to:

- Find out more about what countries are doing
- Understand the Use Case underpinning the Principles/guidelines for linking SNOMED CT and GTINs which are being developed in a joint project by SNOMED International and GS1.

1.4 Finding out more

If you have any queries about this document of the work or the draft principles, please contact Jane Millar jmi@snomed.org at SNOMED International and Christian Hay christian.hay@gs1.ch at GS1

2 New Zealand

The New Zealand Universal List of Medicines (NZULM) is a data source which combines information about all medicines used in New Zealand from the SNOMED CT compliant New Zealand Medicines Terminology (NZMT), the regulatory authority Medsafe, and subsidy information from the medicines funding agency PHARMAC.

The National Product Catalogue (NPC) is GS1 New Zealand's implementation of the Global Data Synchronisation Network (GDSN)[1].

The NZULM and the NPC are electronically linked and synchronised where the NZULM is a 'data recipient' of the NPC. The linking enables product information to be shared with the NZULM (e.g., the GTIN).

The Use Cases envisage the NZMT provides GTINs for currently available medicines derived from the NPC as part of the dataset.

2.1 New Zealand Use Case 1 - Prescribing and dispensing a currently available medicine in primary care

Use Case steps:

(Please note the steps requiring linked information from the NZULM and GTIN sources are highlighted in bold).

1. The patient consults the prescriber.

2. The prescriber makes a diagnosis.

3. The prescriber decides which medicine to prescribe.

4. The prescriber consults the Practice Management Software (PMS) system for a generic or trade list of medicines available to satisfy prescribing decision depending on the prescriber's decision to prescribe generically or by trade name. The prescriber selects from a pick list of currently available medicines.

    i. The list of available medicines contains the generic or trade prescribing term from the prescribing term index of the NZULM.

    ii. The list of potential choices is assembled by combining product information from the New Zealand Universal List of Medicines and the NPC (i.e. the GTIN).

[1] GS1 Global Data Synchronisation Network – GDSN (The Global Data Synchronization Network (GDSN) is an internet-based, interconnected network of interoperable data pools and a global registry known as the GS1 Global Registry. The GDSN enables companies and organisations around the world to exchange standardised and synchronised supply chain data with trading partners

iii. Unavailable medicines should not be available for selection.

5. The prescriber generates a printed prescription and records the treatment in the patient record. The prescription is also transmitted electronically to the New Zealand ePrescribing Service (NZePS) server for uplifting by the patient's pharmacy.

6. The pharmacist receives the prescription and enters it into the dispensary system selecting the medicine to dispense from a list of currently available medicines.

i. The list of potential choices is assembled by combining product information from the New Zealand Universal List of Medicines and the NPC (i.e., the GTIN).

ii. Unavailable medicines should not be available for selection.

7. The pharmacist checks for interactions and drug allergies using the dispensary software.

i. Interaction and allergy checking functionality uses generic medicine names and associated codes from the NZULM.

8. The pharmacist checks the physical product selected for dispensing against the prescription by scanning the product GTIN barcode. The dispensary system compares the scanned GTIN against the list of possible GTINS which will satisfy the prescription's requirements and confirms the product selected is correct. The pharmacist labels the medicine and gives it to the patient.

9. The label uses a label name drawn from the NZULM to identify the medicine dispensed.

10. The dispensary software records the consultation in the database. This information is uploaded to the NZePS server.

11. The prescriber is advised the patient has collected the prescribed medicine via the link between their PMS system and the NZePS server.

2.2 New Zealand Use Case 2 - Prescribing and point of care administration of a currently available medicine in secondary care

Use Case steps:

(Please note the steps requiring linked information from the NZULM and GTIN sources are highlighted in bold).

1. The prescriber examines the patient and makes a diagnosis.

2. The prescriber decides which medicine to prescribe

3. The prescriber consults the Medicine Charting Software system for a generic or trade list of medicines available to satisfy the prescribing decision depending on the prescriber's decision to prescribe generically or by trade name. The prescriber selects from a pick list of currently available medicines.

i. The list of available medicines contains the generic or trade charting term from the NZULM.

ii. The list of potential choices is assembled by combining product information from the New Zealand Universal List of Medicines and GTIN availability information from the NPC. The hospital database system administrator is able to use this information to update the relevant formularies in the database.

iii. Unavailable medicines should not be available for selection.

4. The prescriber generates a chart entry specifying medicine, dose, route of administration, frequency of administration and duration of therapy in the patient record.

5. The nurse administering medicines to the patient consults the patient's medication chart and selects the appropriate medicine from available medicines.

6. The nurse checks the physical product selected for dispensing against the medication chart entry by scanning the product GTIN barcode and confirms it is being administered to the correct patient by scanning the barcode on the patient's identity bracelet. The medication charting system compares the patient's barcode against the recorded barcode for the patient, and compares the scanned GTIN against the list of possible GTINs which will satisfy the prescription's requirements and confirms the product selected is correct and can be administered. The nurse could also scan a barcode identifying their identity (as the person administering the medicines) to enable a more comprehensive audit of drug administration process.

7. The nurse administers the medicine to the patient.

8. The label uses a label name drawn from the NZULM to identify the medicine dispensed.

9. The medication charting system records the administration of the medicine to the patient

2.3 New Zealand Use Case 3 - Management of robotic medication packing system operation

Use Case steps:

(Please note the steps requiring linked information from the NZULM and GTIN sources are highlighted in bold).

1. The pharmacist stores the GTINs of the medicines available for picking through the robotic picking system in the robot system's database by scanning each medicine's pack GTIN barcode. The robot system identifies the medicine from GTIN data held in its NZULM sourced product database and requires the pharmacist to confirm this identification. The pharmacist then assigns a robot canister number to the product.

2. When a medicine canister needs refilling, the pharmacist triggers the robot's medicine refiling and checking system.

3. The pharmacist scans the medicine pack GTIN barcode of the medicine to be added to the robot canister.

4. The robot system confirms the choice of medicine is correct for that canister by comparing the scanned barcode GTIN against the GTINs held in its database for that medicine and canister, and the pharmacist refills the canister.

5. The pharmacist then records the batch number and expiry date of the medicine added to the canister in the robot's database. If this information is provided on the medicine pack in barcode form, the pharmacist records this information by scanning the relevant barcode rather than entering it by hand.

2.4 New Zealand Use Case 4 - Prescribing, dispensing, and point of care administration of medicines in aged residential care facilities

New Zealand are developing a GTIN related Use Case for medicines administration and management in aged residential care facilities. This Use Case will involve GTIN based barcode scanning checks when the medicine is received into the facility from the community pharmacy and when the medicine is administered to the resident by a care giver. This Use Case will be provided when its development is complete.

2.5 **Notes on New Zealand Use Cases

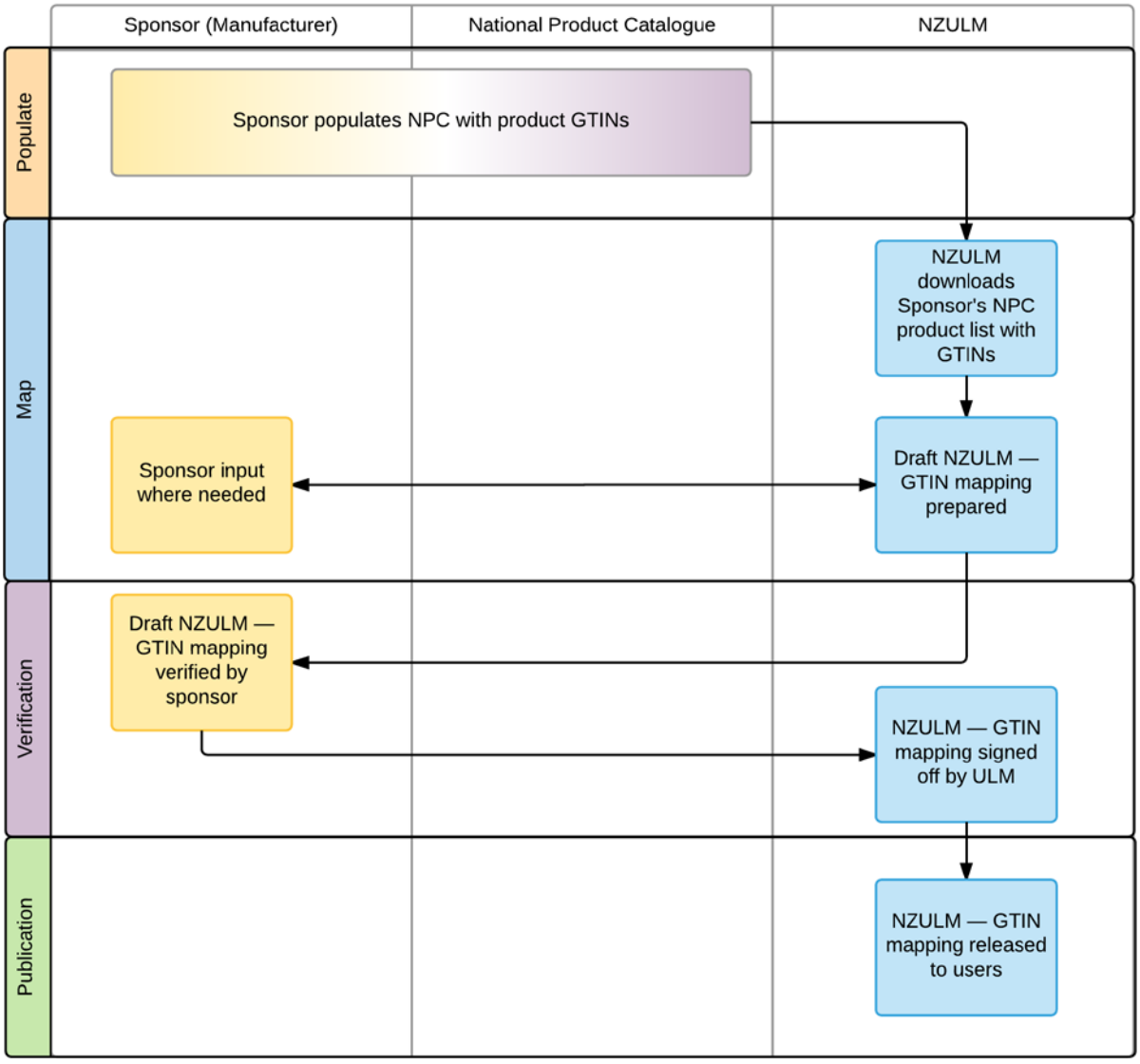
1. New Zealand's GS1 data source: The GS1 New Zealand data source is known as The National Product Catalogue (NPC); GS1 New Zealand's implementation of GS1's Global Data Synchronisation Network (GDSN). In New Zealand, the NPC is the tool used to populate product item master data into New Zealand's District Health Board National Product Catalogue (DHBNC) used in healthcare. The GS1 GTIN is the mandatory product identifier in the DHBNC. The CTPP identifier is currently an optional field in the DHBNC data model but ideally it should be a mandatory field for pharmaceuticals.

2. Importing GTIN data into the NZULM: GTIN data are imported into the NZULM from the NPC. The process has a multistep quality management process to ensure GTINs are correctly mapped to NZULM before these data are released to end users. The supplier on-boarding process is a series of steps in gathering and validating product master data before assigning a supplier *NPC Ready status;* a status signifying the supplier has robust processes to manage and maintain their product catalogue. The NZULM then undertakes its own *Ready to Live* process with the supplier who provides CTPP listing details for entry into the NPC. NZULM works with the supplier to identify and list products not already listed in the NZULM, ensuring the supplier's products are correctly mapped to CTPPs and ensuring also that CTPP identifiers have been correctly entered. Once these validation checks are completed, the supplier is assigned *NPC Live* status for the NZULM and the GTIN data are imported into the NZULM.

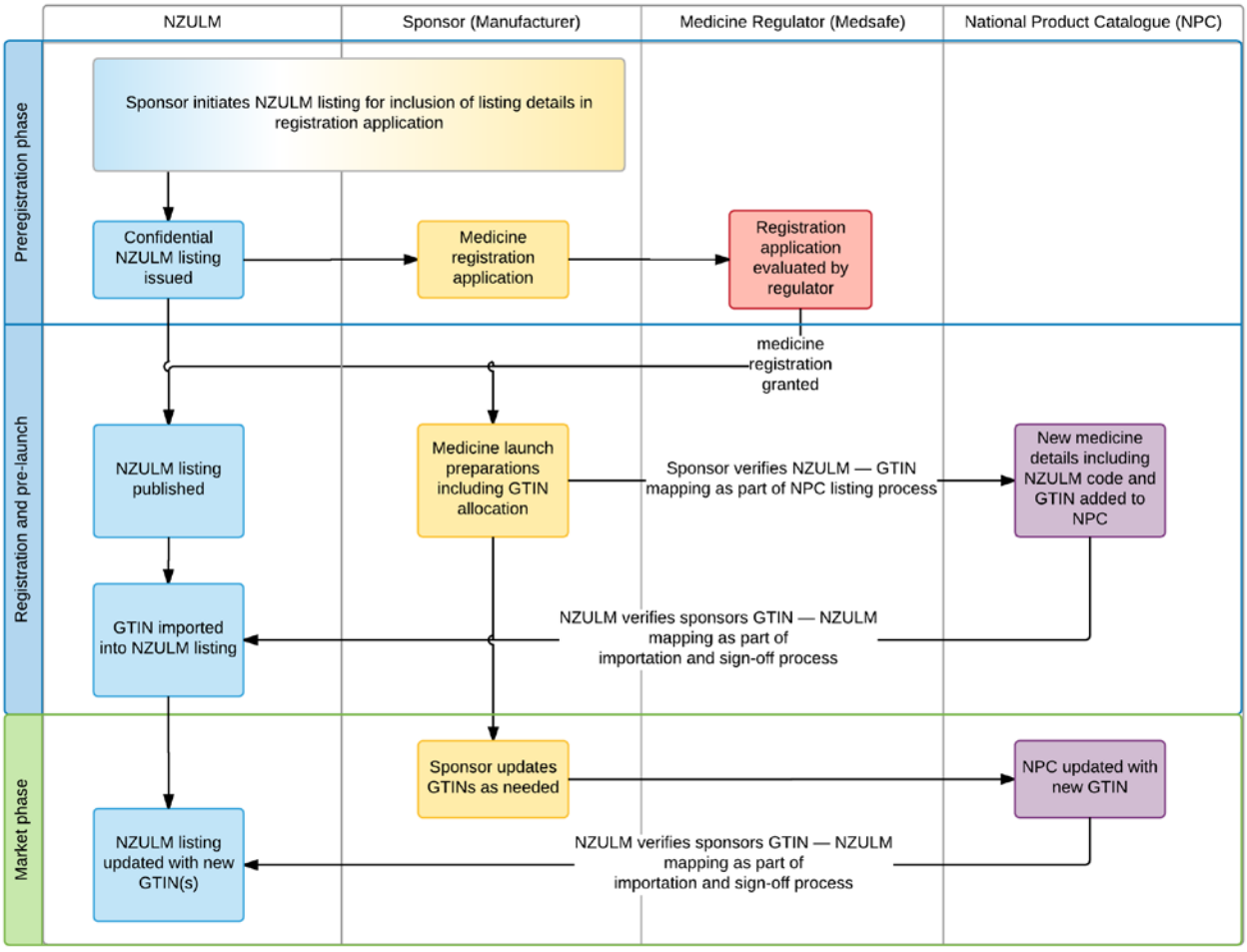
3. Barcode scanning of products for checking purposes: The GS1 system provides unique identification of items at every level of the packaging hierarchy and as such, it is important that any scanning of product is done within the context of the relevant application (e.g scanning of unit of use at bedside for clinical applications or scanning at consumer packing level for multiple doses purposes)

4. Repacking of medicines in hospitals for ward use: New Zealand hospital pharmacies typically breakdown bulk medicine packs into smaller packs for use. Under this Use Case, GTINs will be allocated to these packs by the hospital pharmacy. Ideally, additional information can be encoded in the barcode including, batch number, expiry date, best before date and strength.

NZULM — GTIN mapping, verification and sign-off process for bulk mapping process



NZULM — GTIN mapping, verification and sign-off process for new medicine listings



3 Australia

The following use cases for the linking of AMT (which has SNOMED CT IDs) and NPC information to support product identification, verification and analytics within local master data repositories (e.g. Supply and Pharmacy catalogues) have been identified and are outlined below.

3.1 Australian Use Case 1– Dispensing of Medications (Verification and Capture)

The Pharmacy Board of Australia has set out mandatory dispensing guidelines that state that pharmacists are to use barcode scanners when dispensing medicines. This guideline is National E-Health Transition Authority ABN 18 114 638 336 admissible as evidence of what constitutes appropriate, professional conduct or practice and therefore failure to use a barcode scanner can result in disciplinary action being taken. The use case requires that the current, correct GTIN is stored in the dispensing system. The link between a GTIN and an AMT CTPP identifier (or an AMT Trade Product Unit of Use (TPUU) where this GTIN exists at a unit of use level) could reduce dispensing errors by flagging when a medicine dispensed may not align with what has been prescribed for prescriptions at either an actual trade product level or 'generic' non-branded product level. To automate the checking of prescribed medication to an appropriate dispensed medication would mean the usage of existing relationships between concepts within the AMT. It is noted that due to current limitations within the AMT this verification may not be possible in healthcare settings using dose based orders.

3.2 Australian Use Case 2 - Administration of Medications (Verification and Capture)

Various studies have shown that the use of barcode scanners at the point of administration decreases administration errors by up to 51%. This is seen in the advent of barcode point of care (BPOC) medication safety programs. The use case requires that the current, correct GTIN is stored in the administration system in order that the safety improvements can be achieved. The link between a GTIN and an AMT CTPP (or TPUU) identifier helps to prevent misadministration of medicines by flagging when a medicine about to be administered does not align with what has been dispensed or prescribed thereby improving patient safety.

3.3 Australian Use Case 3 - Availability of Medications (Identification)

Within the NPC there are various fields that may be useful in the ongoing maintenance of a local catalogue, e.g. advising when a product is no longer available. Access to this information requires an initial mapping and ongoing data synchronisation between the internal catalogue and the supplier-published data in the NPC. The use case requires availability data or similar to be stored in the pharmacy system. Having an AMT to NPC/GTIN link may enable substitute products to be sourced as required. The NPC (& GDSN standards) contain a field for equivalent product or replacement product where suppliers may have (or be in the process of) superseding products.

Having an AMT-GTIN link could support product substitution where a therapeutically equivalent product contained in a formulary can be alternatively selected to a product deemed not available.

3.4 Australian Use Case 4 – Validated Update Process (Identification)

Given that the extended information may be utilised in a healthcare environment, it is important that any modifications to the foundational reference files be validated. This process involves all parts of modification such as, the need to correctly identify the product at start i.e. contract, sourcing, purchasing, delivery, dispensing/administration (accurate information at the start and interoperability to share this between multiple systems). The use case requires that any mapping from an external catalogue should be validated prior to use. The link between the AMT and NPC supports a validation process of the data sets across multiple reference sources.

However valuable the information held within the AMT and the NPC, the only value this information has to a local catalogue is through the process of mapping that information into the local catalogue in a simple, valid manner.

3.5 Australian Use Case 5 – Analytics

Given the rising cost of Healthcare and increasing pressure to reduce spending/increase efficiency across the sector, there is an ongoing need to provide improved analytics, both from a spend and clinical perspective. An AMT to GTIN link may enable clinically relevant analysis of specific product use and effectiveness to be performed through the use of standard clinical nomenclature to link to physical products. This combined with spend analysis (through UNSPSPC) enables richer analytics at both the aggregate and specific level to be performed and reported to health administrators. It is important for analytics that there is a common understanding of different coding sets and when they should be used.

3.6 Australian Use Case 6 – Product data Management

Stakeholder feedback has been clear that there is duplicated data throughout the value chain e.g. UNSPSC, NPC, AMT/SNOMED CT. The link between the AMT / SNOMED CT and NPC/GTIN provides a foundation to work with the varied stakeholders collecting product data to ensure that the process is streamlined for all on the basis of ‘provide once, use many’. It is then important to understand the different data sets and codification/categorisation systems to determine how they apply to products, where they should be used and how they can be used together to further improve data quality to underpin healthcare provision.

3.7 Australian Use Case 7 – Consumer Use (Capture, Verification, Identification)

With the increase of consumer mobile device applications, such as the National Prescribing Service MedicineWise+ Application in Australia (which enables a consumer to scan the GTIN on the item and record it within their own or their families medicine list), consumers have a greater desire to be in control of their interaction with the health system and seek out

information. An AMT to GTIN link could support the recording of medicines within a consumer's 'My Health Record' which could then be consumed by connected clinical systems to assist in ongoing medication management including adverse event reporting, drug interactions, and recall notifications.

4 Canada

4.1 Background on the Canadian Immunization Landscape

Most jurisdictions in Canada have a jurisdictional immunization information system (JIIS) which is intended to act as a central repository for the population's immunization records. These Immunization Information Systems are expected to provide:

- The Single Source of Truth for immunization records (using a reference terminology that enables data capture and decision support and reporting) to support vaccine traceability
- Coverage assessment reports (population level)
    - Disease and antigen level (measure protection)
    - Identify At-Risk populations
    - Immunization program evaluation (Vaccine efficacy)
    - Jurisdictional and national reporting
- Individual level coverage assessment reports
    - Validation of immunization record (antigen level), Forecasting and Scheduling
- Reminder/Patient recalls
- Vaccine Inventory Management
    - Including vaccine recalls
- Adverse event following an immunization (AEFI) reporting to facilitate vaccine safety surveillance (regional jurisdictional, including regional health authority level, and national)

Based on studies documenting the extensive manual effort for vaccine record keeping and administration, as well as increased cost to the healthcare system as a result of incomplete immunization records and potential for adverse health outcomes for Canadians, the National Advisory Committee on Immunization (NACI) passed a resolution in 1999, recommending that bar codes be placed on all vaccine products to improve record keeping and the safe use of vaccines. Vaccine manufacturers have agreed to follow Canadian Vaccine Barcode Standards by including the GS1 Global Trade Item Number (GTIN) within the barcode affixed to primary and secondary packaging levels. Manufacturers are also encouraged to include the Lot Number and Expiry Date within the barcodes affixed to primary and secondary packaging levels
(see http://healthycanadians.gc.ca/publications/healthy-living-vie-saine/vaccine-bar-codes-vaccination-codes-barres/index-eng.php for details).

In 2002, the Public Health Agency of Canada's (PHAC) Automated Identification of Vaccine Products (AIVP) Advisory Task Group reached a consensus on the Canada-wide use of GS1 bar code standards to automate the identification of vaccines. This recommendation is to support traceability of vaccines from publicly funded provincial pharmacy distribution to the clinics and ultimately, the point of vaccine patient /client administration. The intended purpose: by embedding a GS1 Global Trade Item Number (GTIN) into a bar code to identify a vaccine product, healthcare providers will have the ability to electronically scan a vaccine product and automatically populate patient health records or immunization registries with up to date, accurate product identification pulled from the Vaccine Identification Database System (VIDS).

4.2 Current State

Immunization Data Capture and data sharing

There are 2 typical scenarios for capturing an immunization event at the point of care

- As part of a history taking (when the health care provider is recording what vaccines the client says they have received in the past). This information is usually high level and generic (e.g. measles vaccine). There is a SNOMED CT subset Canada developed for this scenario.
    - For example; 386012008, Measles vaccine (product)

- As part of the vaccine administration (when the health care provider has the vaccine vial in their hand this provides access to more detailed information). There is a SNOMED CT subset in Canada developed for this type of scenario.
    - For example; 7171000087106, Priorix powder and diluent for solution for injection GlaxoSmithKline Inc. (product) – note a Canadian extension concept.
    - In addition, the GTIN would uniquely identify the vaccine and associated data regarding the specific vaccine being administered as noted in the preceding paragraphs.

Canada has addressed data capture with both scenarios by providing pan-Canadian Immunization SNOMED CT subsets to allow the JIIS to use SNOMED CT to perform most of the functions identified above. However, the information in most JIIS is not complete because many immunizations are administered in the community and are not shared with the JIIS resulting in gaps in a client immunization profile. In addition, the Immunization subsets do not address inventory and traceability requirements. To address these gaps there are Canadian projects underway to improve the immunization data capture and information sharing between point of care systems such as EMRs and the JIIS.

Immunization Tracking and Traceability

Tracking and traceability is a challenge globally and in Canada. We are seeking to address these challenges through the use of the GTIN from the point of the manufacturer through the point of administration, and SNOMED CT – GTIN cross referencing.
The ability to track a dose from the point of publicly funded provincial pharmacies to the point of distribution to a clinic/pharmacy authorized to administer vaccines is critical. These organizations must have the ability to record, store, manage vaccine utilization and record wastage, particularly in times of pandemic and healthcare emergency management, as well as the ability to trace potential negative consequences of health that may be associated with unwanted/adverse event management in association with vaccine administration.
Automated identification of the vaccine using the GTIN enables healthcare providers to work more efficiently rather than manual, labour intensive, error prone processes. The GTIN is accessed through the GS1 Canada ECCnet Product Registry, which is being used by the Public Health Agency of Canada.

4.3 The Opportunity

Data Capture

There will be three types of data in scope within Canadian jurisdictions in the foreseeable future and all of this data must be integrated.

1. Barcode enabled product identification through the GS1 GTIN to facilitate recording of the product, expiry date and lot number as per the AIVP Advisory Task Group recommendations.

2. Data from the VaccineTradeNameCode SNOMED CT Subset for those stakeholders who will not use barcoding to auto populate the point of care records.

3. Data from the VaccineHistoricalNameCode SNOMED CT Subset to fulfill the business requirement to capture and share immunization data from a history taking (where the granularity will be at a higher level).

Therefore, GTIN data must be integrated with the existing pan-Canadian immunization SNOMED CT subsets so the JIIS can fulfill all its requirements. The GTIN is a global standard and as such the data associated with it can be national, regional, or even hospital specific. A coordinated international effort to consistently integrate at all levels correctly is required.

Vaccine Traceability

There is a significant need to enable the capability to extend vaccine traceability from the point of the jurisdictional distribution centres to each receiving site and the site's inventory management, and traceability from the JIIS to the point of care. The inventory management and immunization recording could be integrated to optimally manage both business requirements, which identify an additional reason to integrate GTIN and SNOMED CT.

5 United Kingdom

5.1 Current state

There are currently many databases in the UK with medicine related information (Some examples can be seen below. Note this is far from a definitive list).

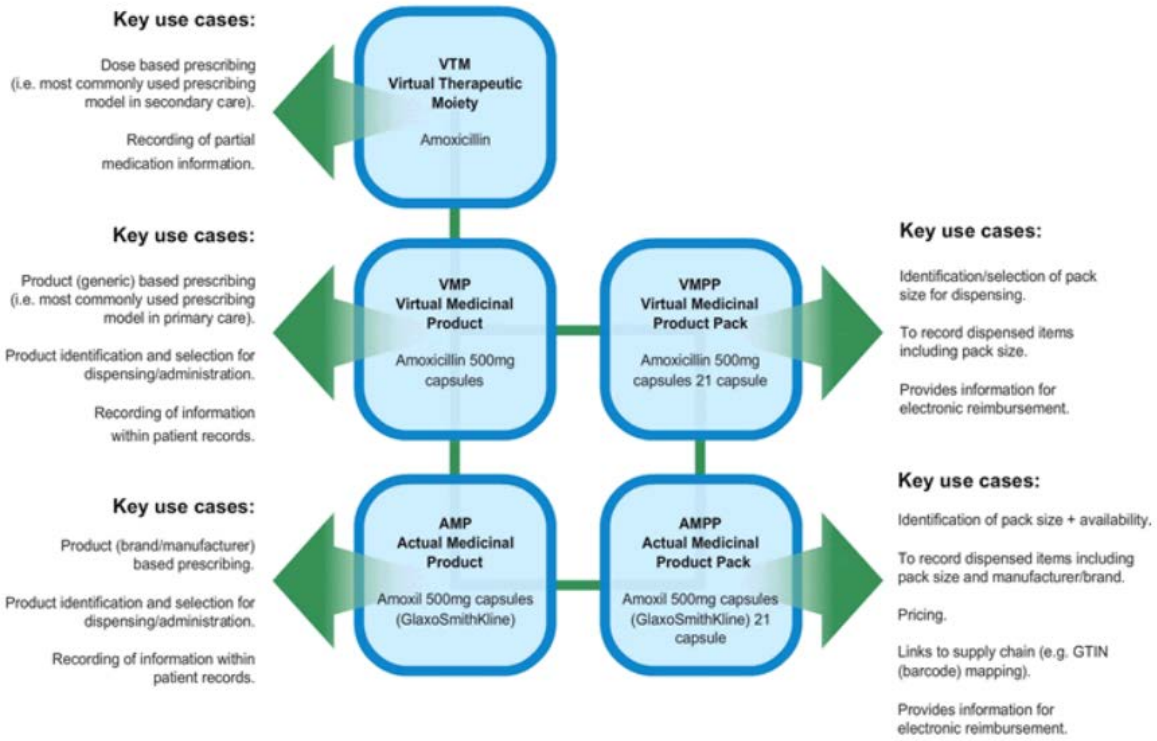
Organisation	Database name or acronym	Purpose
Commercial Medicines Unit	PPRS	For pricing and tender selection
Datapharm	eMC	For prescribing advice
NHS Digital / NHS Business Services Authority	NHS dictionary of medicines and devices (dm+d)	NHS Standard for medicines interoperability (the SNOMED CT UK Drug Extension)
UBM	Chemist+Druggists(C+D)	Longstanding coded information source on medicinal products
MHRA	MHRA (Sentinel)	For managing licencing
RxInfo	Define	Medicines information and analysis on usage/cost (extracts from disparate systems collates/analyses once converted to dm+d terminology)
QuintilesIMS		medicines usage data
Proprietary Databases	e.g. Multilex, Millenium	to support prescribing, decision support etc
Hospital maintained		To support prescribing, admin, discharge etc.
NHS Hospital Pharmacy		For collecting medicines usage

However, by 30th June 2017 there is a requirement to use the NHS dictionary of medicines and devices (dm+d) terminology to support exchange of medicines information. After 30th June 2017 only dm+d codes (SNOMED CT concept identifiers) should be used to communicate medicines information between disparate systems. In addition, the Department of Health is requiring all acute trusts in England to use GS1 and PEPPOL standards for orders and invoices.

Therefore, although the full benefits of a coded and interoperable healthcare system cannot currently be realised, the UK is rapidly moving towards realising these benefits. The following

therefore outlines the dm+d data model and the use cases that the UK is currently ***working towards*** in the healthcare IT agenda.

5.2 The dm+d Data Model



5.3 Potential Future State

UK Use Case 1 – Manufacturer data entry

- Manufacturers enter data, including mandatory GTIN, into Global Data Synchronisation Network (GDSN) which links into one or more UK product information management systems (PIMs).
- Manufacturer enters data, including a GTIN, into dm+d portal to inform dm+d authoring process. dm+d allocates required SNOMED CT codes
- Manufacturer enters at least the AMPP code into GDSN
- Manufacturer's GDSN data is published into one or more UK PIMs, but is not yet made available
- The UK PIM looks up the dm+d data for the GTIN and checks that any fields common to the UK PIM and the dm+d are the same. If they are not the same, then the data is not made available and warnings are sent to dm+d, PIM and the manufacturer.
- If a medicinal product GTIN is not found in the dm+d then the UK PIM issues a warning to dm+d and requests confirmation that an entry into dm+d is not required. (NB need criteria for which products in the PIM need to be checked)

The above process ensures that the GTIN, AMPP, and any other common fields, are correct in both the UK PIM and dm+d.

UK Use Case 2 – Primary Care Prescribing

Over 47% of primary care prescriptions are sent electronically through the Electronic Prescription Service (EPS). In April 2016 alone this meant in excess of 40 million messages sent. Each of these messages holds a dm+d (SNOMED CT) code for the medication to be dispensed. Primary Care systems are therefore already compliant with the requirement to use dm+d for medicines interoperability with the sector well on the way to full electronic communication.

The next step in the process will be to realise the linking of the medicines from the clinical system to medicines in the supply chain.

Taking the working model from above, the link between PIM and dm+d will facilitate a full link in the system between dm+d and GTIN codes

- GP prescribed medicine (dm+d)
- Medicine communicated to Pharmacy (dm+d via EPS)
- Pharmacist dispenses against information at hand (dm+d)
- Product scanned at dispense (GTIN)
- System links GTIN to dm+d via information from GDSN/PIM. Correct medication acknowledged (or error spotted)
- GTIN linked to patient record (GTIN/dm+d map) to allow for full track and trace in support of value add Falsified Medicines Directive (FMD) system

UK Use Case 3 – Secondary Care Prescribing

- Doctor prescribes general medicinal requirement but not with complete product details (i.e. dm+d VTM plus dose information, not VMP)
- Pharmacist (or system) turns the prescription into a detailed medicinal product VMP or AMP
- The pharmacy system converts to AMPP and links to GTIN
- The robot or manual system picks the GTIN and updates inventory
- Before the medicine is administered the nurse scans the product GTIN and the patient wristband and checks against the patient record and/or dispensary record
- The medicine is administered by the nurse who records the GTIN
- The medical record converts the GTIN to the relevant dm+d (SNOMED CT) code as required to enable clinical check
- Stock management system checks stock levels by GTIN and reorders by GTIN as required
- Invoices are received and paid by GTIN
- Somewhere (TBC) in the process the physical medicine is checked against the FMD data base

UK Use Case 4 – Adverse event reporting

In order to benefit from the full possibilities of the extended FMD model (i.e track and trace and reporting of adverse events) it is imperative to link the GTIN to the clinical record. As explored

in 2. above this can be done by linking dm+d to GTIN and embedding information in the clinical record allowing trace from prescribing to administration/dispense.

Reporting of adverse events to medication is done through a 'yellow card' reporting system to the UK medicines regulatory body, MHRA. The paper based system is still very much in use but the recently defined eVersion stipulates that medicines information must be sent using dm+d.

A link between the actual item given from the supply chain (FMD regulations – GTIN) to the dm+d code will facilitate this information flow.

5.4 Known issues in UK

Multi-directional mapping

Currently in the dm+d/GTIN mapping tables published with dm+d the allowable mapping between AMPP and GTIN is one to many. This is due to the differences in editorial policy between dm+d and GS1 (e.g. no distinction in colour of syrups in dm+d, different GTINs allocated to e.g. methadone syrup so one AMPP code to 2 GTINs.). There are also instances where many to one (many AMPP to one GTIN) has to be allowed due to differences in handling supplier changes.

It is not yet clear how significant these differences will be in practice.

Coverage

As the manufacturers own the GTIN information it is their responsibility to supply this information for dm+d population. The GTIN element of the existing dm+d database is therefore not complete nor can it be guaranteed (by dm+d maintainers) as reliable, accurate or up to date. There will be a significant exercise to ensure the GTIN data is accurate.

Assignment

There may need to be a link between the identifiers for manufacturers and other locations and organisations which are used by the UK PIM (which uses GLNs), dm+d (which uses SNOMED) and FMD data pool (which has not yet decided what to use).

6 Glossary of Terms

The following table contains the definition of any terms used within this document.

Term	Definition
AEFI	Adverse Event Following Immunisation (Canada)
AIVP	Automated Identification of Vaccine Project (Canada)
AMP	Actual Medicinal Product
AMPP	Actual Medicinal Product Pack
AMT	Australian Medicines Terminology
BPOC	Bar code Point of Care
CTPP	Containered Trade Product Pack
DHBNC	District Health Board National Catalogue (equivalent to NCP; NZ)
dm+d	NHS dictionary of medicines and devices
EPS	Electronic Prescription Service
eTP	Electronic Transfer of Prescriptions
FMD	Falsified Medicines Directive
GDSN	GS1 Global Data Synchronisation Network
GLN	Global Location Number
GTIN	Global Trade Item Number
JIIS	Jurisdictional Immunisation Information System (Canada)
MHRA	Medicines and Regulatory products Regulatory Authority (UK)
NPC	National Product Catalogue (Australia)
NZePS	New Zealand ePrescribing Service
NZULM	New Zealand Universal List of Medicines
PEPPOL	Pan-European Public Procurement Online
PHAC	Public Health Agency of Canada
PMS	Practice Management Software
PIM	Product information management system
TPUU	Trade Product Unit of Use

Term	Definition
UNSPSC	United Nations Standard Products and Services Code
VIDS	Vaccine Identification Database System (Canada)
VMP	Virtual Medicinal Product
VMPP	Virtual Medicinal Product Pack
VTM	Virtual Therapeutic Moiety