Summary use cases of standardised product data within Australian Healthcare

As healthcare continues to become increasingly digitised, there is a need to for the entire health system to view all processes within the flow not in isolation, but instead as parts of the same, connected value chain. To support this continuous flow the reliance on interoperable, consistent and quality data is critical. This document seeks to aid the understanding of the broad requirements of products data across organisations and processes by defining some of these key processes where product master data is essential.

The use cases defined within this document have been identified by cross sector representatives from the Australian health system. The use cases reflect the core value chain processes where there is a need to ensure consistent, quality data based on data standards and containing standard identification. Ensuring standardisation in turn will support the improved ability for data capture, data sharing and data analytics – but even more importantly support improve patient care, clinical processes and health outcomes.

There is acknowledgement that in many of the use cases or processes outlined within this document there is intersection with disciplines outside of 'supply chain' such as clinical practice, however this does not diminish the importance of this data but instead amplifies it if the product data is relied upon for decision making related to patient care.

This document is designed to be able to be used when considering implementation of data standards and data synchronisation within our health system (specifically with regard to implementation of the National product Catalogue), however please note that they are not necessarily presented in the order that processes may occur, nor are the consideration of these use cases limited to the NPC. Some of these Use Cases were originally defined by global healthcare stakeholders in conjunction with GS1, however this document extends and localises the content. The additional Australian Use Cases have been defined in order to help highlight why the quality and timeliness of the data provided is so important across the entirety of healthcare supporting processes within the organisations operating within it.

As the industry needs are constantly changing, this document will also continue to require input from industry over time to remain in step with this change. Any additional use cases, or any suggested amendments should be highlighted to the GS1 Australia healthcare team (healthcareteam@gs1au.org) for inclusion in future updates.

Thanks to those from the Australian Healthcare sector who have contributed to the collaborative development of this document.

The original version of this document was developed within the Australian Digital Health Agency Master Data Management Working Group in 2017. A copy is available at *https://www.gs1au.org/download/gs1au-use-cases-product-data-standard.pdf/file* This updated version is the result of a whole of sector review of the National Product Catalogue that took place in 2021/2022 to ensure that all tools were updated to reflect the current and near future needs of Australian healthcare. Further updates will be made as the sector continues to evolve and can be requested via the GS1 Australia Healthcare team (refer above).

The National Product Catalogue (NPC) is a service that was developed for the Australian healthcare sector as a core deliverable of the National eHealth Transition Authority (NeHTA) Supply Chain program and is hosted on behalf of Australian healthcare by GS1 Australia. Governance for the service is provided via an industry Advisory Group made up of stakeholders from across the sector which include government, public and private health, manufacturers, sponsors, distributors and wholesalers of regulated healthcare products.

Use Case	Objectives	Use Case description
A. Tendering/Sourcing/ Contracting	• Ensure the supplier provides the buyer accurate, complete and standardised data as part of the tender submission • That the buyer can subsequently evaluate, and award the desired suppliers and product at the correct level of packaging • Remove need for duplicated effort in sourcing, formatting and providing data to support these processes by enabling consistency	Generally, tender data is collected by different buyers / jurisdictions using different mechanisms. This may be proprietary spreadsheets or in hard copy format. The lack of clear direction and inconsistency in instruction creates inefficiencies for suppliers in collating the required data, leading to lower quality tender submissions and impacting the inability for buyers to undertake efficient comparison of supplier responses, update operational systems with critical contract data and ultimately source the appropriate products at the appropriate pack size. Data highlighted within this use case is used to support the Tender process, General Sourcing (for contract and non-contracted items) and to ensure core data is available for reference within contracts. Data provided within the NPC flagged within this use case should be used for responding to Tenders and providing basic information required for contracts.
B. Item Master/ Catalogue Management	• To improve the efficiency and effectiveness of establishing and maintaining item information within and across healthcare systems • To support the need for catalogue creation, maintenance and classification of products within health services • Remove need for duplicated effort in sourcing, formatting and providing data to support these processes.	Sourcing, maintaining and capturing the necessary item information in an accurate, timely, consistent and reliable manner allows an organisation to set up an item master and/or catalogue the item so that it can be used across all relevant healthcare systems that utilise item data. By capturing the information once, from a reliable source such as the NPC, and storing within a central source of truth such as an ERP, then feeding this clean data to all necessary operational systems, the healthcare provider can reduce administration effort, reduce item errors through improving accuracy and timeliness and allow item data to be shared across clinical and non-clinical systems to support healthcare delivery.

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Use Case	Objectives	Use Case description
C. Purchasing/Ordering/Buying	• Ensure the customer/buyer has accurate and complete product data to enable an efficient procurement/ purchasing process • Remove need for duplicated effort in sourcing, formatting and providing data to support these processes • Remove duplicated process for suppliers to provide the same data repeatedly	Very often customers do not have complete or the latest information available to place product orders. The NPC is often used to provide & update information about products, their order units, their reimbursement codes, their prices and other important attributes that need to be maintained to ensure efficient processes. The NPC also provides the mechanism for suppliers to provide updates to all customers of key item data changes and manage agreed price changes for customers. Where all products are published/visible to all recipients it allows for easy market scanning for 'like' products where substitution is necessary. Consistent, quality data and data capture enables some process automation – such as Electronic Data Interchange (EDI)
D. Order and Invoice Reconciliation	• Ensure the customer has accurate product detail for ordering and to ensure accurate pricing information in order to address ordering and invoice discrepancies • Remove need for duplicated effort in sourcing, formatting and providing data to support these processes • Reduce the discrepancies in data that cause delays in order processing or lead to delayed settlement • Remove duplicated process for suppliers to provide the same data repeatedly in order to fix errors	Often invoice payment is delayed due to lack of accuracy in the order price quoted versus the invoice price returned. This impacts on both buyers, who must undertake inefficient rework to address the issue, and suppliers, who experience cash flow impacts as a result of delayed payment processes. Alternatively, there is often inaccuracy between the price quoted in the buyer purchase order and the price in the supplier system. One of the key functions of the NPC is to provide accurate pricing information to allow exchange of that information between trading partners to support faster invoice matching with purchase orders and therefore payment. IMPORTANT NOTE: Unlike Item Master data in the Item record, pricing that is shared via NPC is private data so is only visible to a suppliers chosen trading partner. Consistent, quality data and data capture enables some process automation – such as automated payments and Electronic Data Interchange (EDI).

Use Case	Objectives	Use Case description
E. Reimbursement Codes	• Ensure that the correct reimbursement code is mapped to the appropriate GTIN within all systems to enable accurate and streamlined claims process • Remove need for duplicated effort in sourcing, formatting and providing data to support these processes • Remove guess work and reprocessing within each provider in order to ensure they have accurate data • Remove issue of incorrect mapping and wrong/missed reimbursement	Reimbursement codes and whether products qualify to be included within a program such as PBS or PRC may change over time either as the lists change or as products are added or removed for other reasons. There is a need to identify the correct codes for specific products at level of packaging related to use to ensure that the process to account for these products is seamless. The NPC provides an effective mechanism to ensure that products have the correct reimbursement codes on an ongoing basis and can automate the process to update codes as the listed products or codes associated with them change over time. The publication of this information should remove some of the burden on customer service teams in suppliers to provide codes on an adhoc basis. Consistent, quality data and data capture enable some process automation – such as the management of prosthesis rebates or pharmaceutical benefits scheme reimbursements or claims.
F. Regulated Product Formulations	• Ensure the correct relationship between the GTIN (actual products on market) and the product formulations registered with a specific regulator • Remove need for duplicated effort in sourcing, formatting and providing data to support these processes	Often a supplier will gain regulatory authority to sell a range of pack size combinations and formations of a particular product within a given market. Generally, not all of these regulated / authorised pack sizes and formations are released in that market. It is important for the regulatory authority (or others) to have a record of the pack sizes and formations actually being sold in a market for recall and traceability purposes and it is important to any buyer that the products that they are sourcing are authorised appropriately. By matching the regulatory approval to the physical product within the item data it also enables improvements to many other processes where the physical and digital world meet within healthcare.

Use Case	Objectives	Use Case description
G. Logistics/Inventory Management	• Provide accurate dimensions, weights, dangerous goods, handling instructions, storage information and other data required for effective distribution, transport, warehousing and 'health service' storage optimisation • Streamline processes of communicating information related to product movement (automated processes such as good receipting) and use • Remove need for duplicated effort in sourcing, formatting and providing data to support these processes	Ensure safer handling and storage of all products throughout end-to-end supply chain from manufacturer, through distribution to health service and patient/consumer. Supporting optimisation of storage and transport to ensure efficiency, waste control, dangerous goods management, correct storage and patient safety rely heavily upon accurate data. Data from NPC can be used to provide accurate information for the management of logistics related tasks. With standard unique identifiers in place, administration and dispensing points, distributors and manufacturers will be able to exchange medical device or medication usage, location and product availability information. This in turn supports data analysis for inventory optimisation while also improving medication and device availability across the supply chain. Consistent, quality data and data capture enable some process automation and greater aggregation and sharing of data between partners along the value chain.
H. Distribution channel	• Provide accurate product information to allow effective distribution function and product conversion along the distribution channel from manufacturer through to point of care • Ensure data used within distribution is consistent with brand owner to support traceability and accuracy throughout • Remove need for duplicated effort in sourcing, formatting and providing data to support these processes	There is a need to understand the pack configurations, relationships and weights / dimensions of all products to ensure that their warehouse operations and distribution/re-distribution processes are seamless and cost effective. Accurate data means that the distribution channel functions effectively throughout both inbound and outbound activities. • Supply chain teams need accurate data to support forecasting, inventory, planning and fulfilment. • Sales and customer support teams need accurate information when dealing with customers. • Having incorrect information about a product pack size may mean that an order for 10 items may in fact contain 12, or that packs need to be split. Consistent, quality data and data capture enable some process automation and greater data analytics capability to support the distribution channel planning and operations.

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Use Case	Objectives	Use Case description
I. Unique Device Identification and regulator defined attributes for registration and surveillance	• The data related to the product and the unique identification provided using GTIN (or other UDI's) ensures consistency and accuracy across all systems that need to refer to the same product, from the point where the product is registered with the local regulator • Uses of this data may include support of post market surveillance activities or device registries • Linkage of unique identification to foundations for data capture enable traceability throughout lifecycle of product • Remove need for duplicated effort in sourcing, formatting and providing data to support these processes • Ensure support for all 'UDI' types & issuing agencies • Enable supplier/sponsor to leverage data that is published to trading partners in meeting their regulatory data requirements (UDI databases).	Unique Identification and related data captured can be used to support regulatory compliance (local and in other countries) as well as supporting improved patient safety and business processes. A single, global system of standards and a reliable mechanism to provide product data is fundamental to enable an efficient and effective implementation of unique identification by all stakeholders – including regulators. By using a GDSN connection such as the NPC, in many cases product data can flow from the manufacturer's internal database to their regulators, health providers/recipients, distributors and other organisations where consistent, standardised and accurate data is needed all via a single mechanism. The data attributes defined for Unique identification of products that can then be used to ensure accuracy in areas such as patient records, inventory management, recall processes as well as support analytics needed to support ongoing health process improvement. Some markets are using Data Pools like the NPC to register data as an efficient mechanism and trusted source of data for multiple Unique Device Identification (UDI) databases with regulators. As at May 2022 this is being considered by the Australian Therapeutic Goods Administration (TGA) as an option for the future AusUDID. **Note:** enablement of data capture to fully maximise the benefits of unique identification requires an investment by manufacturers, healthcare providers and other organisations. It also requires their chosen technology solutions to be capable of utilising unique identification and product hierarchies based on global standards.

Use Case	Objectives	Use Case description
J. Medicine Dispensing, Administration and Safety	• Ensure accurate, complete and up to date product information for validation of medicines (medications) at point of dispensing (which may be in the pharmacy or by any regulated healthcare provider), including where products may have changed packaging or require substitution • Support improvements to medicines safety for patients, consumers and their carers • Provide data needed to clearly define physical product (active ingredient, form, dose, pack) for linkage to clinical support using Snomed/AMT • Ensure accurate data available to support consumer applications and all points of administration including patient/consumer self-management • Ensure data that is needed to support patients, consumers and clinicians is readily available – including linkages to supporting digital content such as patient information leaflets and product information used by clinicians	Supporting greater medication safety by improving data and processes through data capture/scanning is regularly highlighted as a critical need within healthcare globally. The data highlighted within this use case supports the capturing the unique product identification (e.g. scanning a barcode), validation at the point of medicine (medication) dispensing, and validation during administration process by either clinician or patient. Ensuring accurate and consistent data within all pharmaceutical product databases provides the foundations for safety and helps ensure traceability in final stage of the pharmacy supply chain – at the patient. Within hospitals ensuring that the unique identification of the product is captured at dispensing and at administration along with patient identification and care provider identification is important to ensure quality and safe processes. Consistent, quality data and data capture enable some process automation but most importantly can be directly linked to the elimination of 'never events' and other patient safety improvements that result from electronic medication management

Use Case	Objectives	Use Case description
K. Medical Device Management and traceability	• Ensure accurate, complete and up to date product information for validation of medical devices at point of use (which may be in theatre). • Remove need for duplicated effort in sourcing, formatting and providing data to support these processes. • Remove current process to source data needed for consumer applications from non-verified sources • Enable suppliers to provide the most up-to-date products data as available products change • Ensure data that is needed to support patients, consumers and clinicians is readily available – including linkages to supporting digital content such as patient information leaflets and instructions for use.	Ensuring complete and accurate data related to a product is present in all systems is critical to ensuring that when the unique product identification is captured at point of care (e.g. scanning a barcode) validated data related to medical product usage (eg theatre procedures) can be recorded. This process requires accurate data to be in the associated product database. Ensuring that the unique identification is captured at usage along with patient identification and care provider identification is also important to ensure quality and safe processes as well as accuracy of patient records. This use case intersects with post market surveillance which relies on accurate association of products to patients within clinical process. Use of unique identifiers (GTIN) in conjunction with medical devices and capturing this data throughout the supply chain including point of care, supports more streamlined recall processes. Accurate accounting of products also supports better financial management and a more effective management of inventory. Data associated with each unique identifier/device and capturing throughout all processes make it possible to determine the level of stock at each stage of the supply chain and compare this to the device's risk category, shelf life and demand urgency to make informed decisions whether to accelerate or pause manufacturing, facilitate the faster movement of goods along the supply chain, or reallocate stock to a more appropriate location based on demand. Consistent, quality data and data capture enable some process automation and greater aggregation and sharing of data/information, including the ability to capture data for longitudinal studies related to products.

Use Case	Objectives	Use Case description
L. Recall Management / Disposal	• To improve the management of recall processes and removal of medical product from use when beyond useful life. • Remove need for duplicated effort in sourcing, formatting and providing data to support these processes.	Real time visibility of products – and traceability – across the healthcare system in Australia requires the use of consistent, unique product identification to identify what a product is, where it is, or where it has been. The use of unique product identification (GTIN), in conjunction with unique location data (GLN) product core elements to a provide visibility to the location of products within the value chain. By enabling visibility within the value chain the detection, quarantining and removal of impacted medical items when they are subject to a recall or have passed their effective useful life is a more streamlined process. Ensure consistent data is used across all systems improves the timeliness and effectiveness of recall and disposal processes related to affected products in the supply chain. Ensuring that specific products are identified consistently within all systems and locations helps to minimise the potential adverse impacts of having the products in circulation. Consistent, quality data and data capture enable some process automation, especially where quality data and global product identification is used within inventory, warehouse or clinical systems to accurately record actual products. With the right technology within the health system to support a digital supply chain, automated messages should be able to be issued to automate the process to identify where unused products are and potentially what patients or consumers may have been impacted. **Note:** enablement of global data standards and data capture are necessary is necessary to enable this use case. There is a requirement for investment in many parts of the healthcare system to ensure that the data needed is available. It also requires technology solutions to be capable of utilising unique identification, product hierarchies and unique locations based on global standards within their platforms.

M. Point of Care/Consumer Scanning	• Reduce data errors and improve the efficiency of processes. • Support product handling, storage and use • Remove need for duplicated effort in sourcing, formatting and providing data to support these processes. • Ensure data that is needed to support patients, consumers and clinicians is readily available – including linkages to supporting digital content such as patient information leaflets and instructions for use.	Standard unique identifiers used to match patients, healthcare professionals and products will reduce errors (e.g. administration of an incorrect product) and can prevent the use of expired or recalled drugs or devices. Enable product identification to be captured throughout its lifecycle – including at point of care. This ability to know exactly what patient received or used what product supports adverse event reporting, product recalls, longitudinal studies, value based case and many other areas that rely on accurate data. Ensuring consistent and accurate data and the availability of unique identification (GTIN) on all products has also been shown to support greater accuracy of clinical records, streamlined reimbursement processes for devices and most importantly can help ensure appropriate use of products where the data is available at point of care.
N. Data Analytics	• Consistent product data standards to ensure that regardless of transactional system, data is interoperable and can be analysed for the benefit of review, planning and process improvement	As a growing need within healthcare that supports ongoing improvements and better system management the ability for transactional or event-based data to be compared, aggregated and analysed based on a core set of attributes and standard identifiers has become a must within Australian healthcare. Specific uses may include, but are not limited to, spend analysis, product performance/post market surveillance and areas of process improvement, however with increased focus on 'Value based' healthcare and therefore Value-Based procurement the focus on data analytics and the availability of normalised data by using standards is ever increasing. Within health providers or hospitals, the data analytics supported by standardised product data may include the analysis of procurement time, theatre downtime or waste that is generated by the use of specific products. Future uses may also include areas related to sustainability or other similar topics.

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O. Supply Chain Surety	• Easier sourcing of alternative products by utilising standardised categorisation and data • Fastest possible response to changes in availability of products to ensure minimal (or no) disruption to supply chains within health providers and the patients they support	Unplanned events, natural disasters, geopolitical events and global macro external factors reinforce the need for 'Supply Chain Surety' to be firmly enabled within the strategic goals of all parties in the end-to-end supply chains across industry sectors. Whilst procurement goals often remain focussed on choosing specific products and suppliers as part of contracted suppliers or supply panels, the changing availability of products within market sectors, faster reaction and sourcing of alternative products became an absolute requirement. Ensuring that data related to all (or as many as possible) products that are available to Australian health providers are easily visible and searchable helps to improve the speed of this process