2023 AMDR Member Data: Definitions & Collection Methodology

October 10, 2024

Purpose:

The purpose of this document is to explain the methodology employed by the Association of Medical Device Reprocessors (AMDR) to aggregate, compile and extrapolate the data set in order to best represent AMDR members and the valuable role reprocessing plays in reducing cost and waste in healthcare.

Data collected from AMDR's members includes:

1. Product Data – information about the products reprocessed and sold
2. Account Data – information about who the products were sold to
3. Company Data – information about AMDR member companies

The above data is collected from the members on an annual basis in Q1 for the previous year ending December 31. Once the data is received, it is reviewed by AMDR's President for data quality issues. Any issues identified are to be resolved by AMDR and members. AMDR works with its data committee to prepare for release of the data, making a report to the AMDR Board. AMDR maintains and shares with members a data collection plan that details the data request as well as how the data will be validated to ensure completeness and accuracy.

Background:

Because AMDR's member data contains proprietary information, each member enters into a Data Use Agreement (DUA) with AMDR. AMDR's President, outside counsel and independent data analysts are all subject to DUAs with AMDR, which permit the collection and use of member data so it may be aggregated to develop collective contributions to various metrics. Outside counsel reviews the data request and responses are provided by members directly to AMDR's President. AMDR's President reviews data outputs and seeks input from other AMDR. AMDR staff and consultants (including AMDR's independent data analyst), as necessary, the AMDR Board, on potential legal issues involved with the public release of such data.

All raw AMDR member data will be kept solely on a secure, shared sync file and only AMDR counsel, AMDR President, Communications Director, and AMDR data analysts will be given access.

Data Sources by Workstream:

The below lists the various data sources by workstream.

Product Data

Product data is provided for the various medical devices that a member reprocesses. The data provided comes from a member's ERP system. A description

of each field is provided below. **Note:** Product data related to intercompany transactions is excluded. AMDR is only seeking data related to healthcare delivery clients.

No	Field	Description
1	Item #	A unique reference number maintained by the member reprocessing the medical device.
2	GTIN*	The Global Trade Item Number that provides a unique identification for a product. All products have a GTIN which can be cross referenced with the Access GUDID Database managed by the National Institutes of Health (NIH). The GTIN numbers allows AMDR to uniquely identify a device as the number is universal. Some members do not provide GTINs
3	Product Description	The product description is as accurate and complete as possible to allow analysis to group similar products together. They are listed by product family, for example, "Achieve," "Nellcor Pulse Oximeter," etc.
4	Product category	The product category allows for product data to be easily analyzed in aggregate and for data professional to verify consistency. Preset tags for Cardiology, Patient Care or Surgical.
5	OEM	The Original Equipment Manufacturer. Members use the most recent, most complete name of manufacturer and use division name for large companies (J&J); this data allows AMDR to demonstrate reach across the industry.
6	Original Item #	The unique reference number for a medical device as assigned by the OEM.
7	# of Turns	The number of times a medical device can be reprocessed before it must be discarded. **Note:** The number of turns will NOT be used for direct AMDR messaging, but strictly for academic purposes, such as in an LCA.
8	Device Weight	The weight of the medical device itself (excluding packaging). For consistency, we ask you calculate all weights into US pounds and provide the weight per unit.

		If something is sold in a multi-unit pack, we ask for the per device unit weight so that our total weights are all by device, not by pack.
9	UoQ	The unit of quantity for a device (i.e. how many devices are in a pack, case, etc.). Device Weight / UoQ = Weight Per Device
10	Reprocessing location	Where a device is reprocessed if a member has more than one facility.

* Primary Key (Unique Identifier)

Account Data

Account data is provided for all members' customer accounts that use reprocessed medical devices. The data provided comes from a member's ERP or CRM system. A description of each field is provided below.

No	Field	Description
1*	NPI (National Provider Identifier) or Equivalent	A unique 10-digit identification number issued to health care providers in the United States by the Centers for Medicare and Medicaid Services (CMS).
2*	Account Number	The unique identification number assigned to an account.
3	Account Name	The name of the healthcare facility receiving the reprocessed device. The lowest level facility name should be used. This allows AMDR to identify like facilities between members as well as identity and avoid duplication.
4	Type	The facility type. "Acute care (Hospitals)" is used for hospitals and "Non Acute Care for OBL, doctor offices, ASCs, etc..”
5	Military	Denotes a military vs. non-military facility.
6	Address	The facility address including suite number if applicable. Addresses are used to identify like facilities between members as well as identify and avoid duplication.
7	City	The facility city.
8	State	The facility state if the facility is in the US.
9	ZIP	The facility zip if the facility is in the US.
10	Country	The country the facility is located in.

* Primary Key (Unique Identifier)

Sales Data

Product data by Account is provided by each member. A description of each field is provided below.

No	Field	Description

1*	NPI (National Provider Identifier) or Equivalent	A unique 10-digit identification number issued to health care providers in the United States by the Centers for Medicare and Medicaid Services (CMS).
2	Account Number	The unique identification number assigned to an account.
3	Account Name	The name of the healthcare facility receiving the reprocessed device.
4**	GTIN	The Global Trade Item Number that provides a unique identification for a product.
5	Product Description	The product description should be as accurate and complete as possible to allow analysis to group similar products together.
6	Product type	Devices are identified as "cardiovascular," "patient care" or "surgical."
7	Total Devices Collected (for Reprocessing)	This is the total number of devices collected from the facility; this data point allows AMDR to address issues such as savings per device. Members who collect in partnership with another reprocessor: only the member who collects the device at the customer should count the device.
8	Total Reprocessed Devices Sold	This is the total number of devices sold to the facility; this data point allows AMDR to address issues such as savings per device. Devices collected and sold to the same institution should be on the same line so we can compare collections to buy-back across the industry. Members who reprocess in partnership with another member: only the member who delivers the sold device to the customer should report the product sale.
8\9	Savings	Savings calculations are the difference between the reprocessed sales price and the Average Sales Price (ASP) OR actual costs paid by the facility.

* Provides linkage to Account Data

** Provide linkage to the Product Data

Company Data

Company data is provided by each member reprocesses. A description of each field is provided below.

No	Field	Description

2	Employees	Number of full time employees dedicated to R.
3	Part time employees	Number of part-time employees, technicians, contractors, and related working in support of the R business.
4	# of Manufacturing Facilities	The number of reprocessing facilities, if things have changed.
5	Reprocessing Facility Location	The address, city, state, and zip of the reprocessing facility. Multiple locations should be listed on separate lines.

Reference Data:

The below lists the reference data that was used in the analysis and reporting of the Member data.

1. Access GUDID – The Global Unique Device Identification Database (GUDID) contains key device identification information submitted to the FDA about medical devices. https://accessgudid.nlm.nih.gov/
2. GMDN – The Global Medical Device Nomenclature (GMDN) is a system of internationally agreed generic descriptors used to identify all medical device products. https://www.gmdnagency.org/https://www.gmdnagency.org/
3. DMIDS – The German Medical Devices Information and Database System. https://www.bfarm.de/EN/Medical-devices/Portals/DMIDS/_node.htmlhttps://www.bfarm.de/EN/Medical-devices/Portals/DMIDS/_node.html
4. Definitive Healthcare – Hospital database that lists the name, address and bed count for all hospitals in the US. **Note:** In 2020-2021, this information was provided by Lars Thording of Innovative Health. https://www.definitivehc.com/
5. FX Rates – The annual average exchange rate is used to covert from USD to EUR. https://www.federalreserve.gov/releases/g5a/current/
6. US News & World Report Hospital Rankings – Global authority in hospital rankings. https://www.prnewswire.com/news-releases/us-news-releases-2020-21-best-hospitals-rankings-and-special-hospital-heroes-series-during-historic-year-for-health-care-301100746.html
7. Military Hospitals – Listing of all military healthcare facilities. https://www.medicineandthemilitary.com/community-and-lifestyle/military-medical-facilities-map
8. Defense Medical Information System (DMIS) – Listing of past and current United States Department of Defense (DOD) medical facilities https://health.mil/Military-Health-Topics/Access-Cost-Quality-and-Safety/Military-Hospitals-and-Clinics/Geographic-Reference-Information/DMIS-ID-Tableshttps://health.mil/Military-Health-Topics/Access-Cost-Quality-and-Safety/Military-Hospitals-and-Clinics/Geographic-Reference-Information/DMIS-ID-Tables
9. Urbancity – Listing of rural vs. urban areas by ZIP code. This is based off of the most recent census.

https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes.aspx
Alternative methodology
https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html

10. Waste Disposal – the cost for medical waste disposal. We are using the "All" column, regulated medical waste, to assume $1286 per ton." There are 2,000 pounds in a ton. Or $0.643 per pound.
https://practicegreenhealth.org/membership/awards/sustainability-benchmark-reports

(Median cost per ton):

Median cost per ton	All	Small	Large	Top 25	Waste Circle
Solid waste	$134	$146	$122	$132	$170
Recycling	$157	$165	$151	$194	$157
Regulated medical waste (onsite and offsite)	$1,286	$1,435	$1,135	$1,835	$2,402
Hazardous waste	$5731	$7378	$4736	$6243	$6512
Total waste	$308	$322	$305	$325	$372

Note: Total waste is the sum of solid waste, recycling, regulated medical waste, and hazardous waste. Pharmaceutical and food waste are counted as subsets of those four waste streams. Cost for recycling includes only those facilities that had a net cost (not a profit) for their recycling program.

Tools Used:

1. Python Notebooks – Python Notebooks are used for data preparation, blending and generating master report. Microsoft Office – Used for data collection from AMDR's members as well as reporting.

Data Governance:

Data Quality

Python Notebooks are designed to be run annually without having to modify the workflow unless a change is requested. Each of the various data sources is validated as follows:

- Member Data – these are captured in an Excel template. These Excel files are imported in Python Notebook file. A validation is performed on each file received.

Year over Year Changes

It is critical that Members reporting the numbers for their respective companies do so in a consistent manner year over year to ensure the accuracy of reporting. If discrepancies are observed by AMDR's data scientist, they will reach out to the member for clarification. For 2023 data, the following items were noted.

- On device weight on the products tab, measure need to be in US pounds.
- Only sales to final customers should be provided to AMDR to avoid double counting.
- Members need to reconcile all sales have NPIs and GTINS, or the data match doesn't work.
- For all others, see AMDR "AMDR's 2023 Raw member data overview, discrepancies and omissions and implications memo."

Version History:

Version	Effective Date	Created By / Updated By	Approved By	Comments
1	2022-04-27	Ari Levy	Dan Vukelich	Original Document
2	2023-05-08	Ari Levy		Minor Updates
3	2023-05-16	Dan Vukelich	Dan Vukelich	Final edits
4	2023-11-16	Dan Vukelich		Amendments for 23 dataset
5	2024-09-10	Dan Vukelich		Further lessons from 2023 data set
6	2024-10-09	Dan Vukelich		Streamlined to focus on 2023 data aggregation ONLY for sharing with researchers and others to explain our data set.
7	2024-10-13	Pranay and Dan		Review and accept Pranay's changes, delete comments that have been addressed, finalize as this memorializes 2023 data procedure and methodology.

Appendix:

Data Request

AMDR 2022 Data Reporting Template

Summary Reporting Template – Example

	Prior Year	Current Year	% Difference
Number of Accounts (hospitals & surgical centers)			
Total Devices Collected (for Reprocessing)			
Total Reprocessed Devices Sold			
Savings US$			
Savings €			
Waste Diverted LBS			
Waste Diverted KG			
Waste Savings US$			
Waste Savings €			
Number of Countries with Accounts			
US Military Bases			
Jobs			