



COMPANY TECHNICAL REPORT

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I. Data Dictionary

Column	Header Name	Description
CE Manufacturer		
B	INName	Name of drug
C	Abbrev	Standardized abbreviation of drug
D	Manufacturer	Company that manufactures drug
E	Lives	The total number of lives saved by an individual drug, calculated from the formula $\frac{\text{Total Number of Units (TNU)}}{\text{Daily Dose (DD)} \times 365}$
F	Sum all regimens containing drug	The total number of lives saved by an individual drug, including those lives saved by combinations using the specified drug
G	Percentage	The proportion of lives saved attributed to a particular manufacturer for an individual drug
H	DALYs	The impact score of an individual drug split by manufacturer, calculated by multiplying the percentage (column G) by the total DALYs alleviated by an individual drug
I	Total Price Paid	The total amount of money spent by a manufacturer to produce a drug
J	Cost Effectiveness (Impact/Total Price	The cost effectiveness of a drug split by manufacturer, calculated by dividing the DALY

	Paid)	impact score by the total price paid (column H/column I)
Original Data		
A	Country	Country to which drug was supplied
B	Source	Organization that funded the distribution of the drug
C	INName	Name of drug
D	Abbrev	Standardized abbreviation of drug
E	Strength	Potency of drug (measured in mg or mg/mL)
F	Quantity per package	Number of complete treatment regimens in each shipped package
G	Number of packages	Amount of packages ordered/shipped
H	TNU	Total Number of Units, calculated by multiplying the quantity per package by the number of packages (column F x column G)
I	Daily Dose	Standard daily regimen of drugs (typically in mL or tablets)
J	Lives	The total number of lives saved by an individual drug, calculated from the formula $\frac{\text{Total Number of Units (TNU)}}{\text{Daily Dose (DD)} \times 365}$
K	Total Price Paid	Amount of money spent in purchasing drug packages

M	INCO	Incoterm; details method of package transport (see more here)
N	Unit price exworks	Price per unit of drug based on just manufacturing costs (excludes transportation costs)
O	Manufacturer	Company that manufactures drug
P	Manufacturing site	City in which drug was manufactured
Q	Country of manufacture	Country in which drug was manufactured
R	Originator/Generic	Indication of whether the drug is being produced at the original manufacturing site or by a generic producer
S	Dosage form	Method of drug delivery (pills or oral liquids)
T	Payment terms	Way in which payment took place for drug packages)
U	Product group	Drug class (anti-retroviral, anti-malarial, etc.)
V	Shipment method	Method of package transportation (land, sea, air)
W	Treatment cost	Cost of full standard regimen of drug
X	Type of package	Packaging type (bottle, ampoule, container, etc.)
Y	Unit of measure	Unit in which drug is measured for administration (mL or tablet)

Z	Duration in days	Length of treatment
AA	Year of order	Year in which drug packages were ordered/shipped

II. Scoring Calculation

The current cost effectiveness scoring mechanism is detailed below.

1. Data is sourced from the [Global Price Reporting Mechanism](#) in order to gather information including drug manufacturer, source, and regimen values.
2. The daily dose information is gathered from [this spreadsheet](#). Daily dose values were calculated by conducting research on the daily dosage value (in mL or mg) for each medicine and dividing that value by the strength of individual doses in the shipments.
3. Lives saved were calculated for each drug, split by manufacturer, using the following general equation:

$$\frac{\text{Total Number of Units (TNU)}}{\text{Daily Dose (DD)} \times 365}$$

4. The proportion of lives saved by a particular drug for a single manufacturer was found, and this percentage was multiplied by the total impact score for that drug (retrieved from our ORS) in order to convert lives saved to life years (DALYs) saved.
5. Cost effectiveness was calculated by dividing the impact score by the total price paid for the drug.
6. The general workflow for finding cost effectiveness from the raw data is:



1.

III. An Example Scoring Calculation: Cost Effectiveness of Atazanavir

The following workflow is an example of how cost effectiveness would be calculated for Atazanavir in 2010.

1. According to the data on the “Original Data” sheet, Bristol-Myers Squibb and Emcure Pharmaceuticals Ltd. are the only manufacturers that produce Atazanavir.
 - a. There are many different Atazanavir shipments listed on the “Original Data” sheet, so we will walk through one example of the lives saved calculation for each company aforementioned.

Company	Total Number of Units	Daily Dose	Lives Saved
Bristol-Myers Squibb	12,300	2	$\frac{12,300}{2 \times 365} = 16.85$
Emcure Pharmaceuticals Ltd.	8,640	2	$\frac{8,640}{2 \times 365} = 11.84$

2. A sum of all these calculations broken down by company is on the “CE Manufacturer” sheet. As we can see, the total number of lives saved by Bristol-Myers Squibb through Atazanavir was 1,046.47, and the total for Emcure Pharmaceuticals Ltd. 603.62. Therefore, by combining the two values we can see that Atazanavir saved a total of 1,650.08 lives.

3. We are now going to convert this value to a proportion of disease burden alleviated.

Company	Percentage
Bristol-Myers Squibb	$\frac{1,046.47}{1,650.08} = 63.42\%$
Emcure Pharmaceuticals Ltd.	$\frac{603.62}{1,650.08} = 36.59\%$

Using this percentage, we can convert the number of lives saved to the number of life years saved after pulling the DALY impact score of Atazanavir from our ORS.

1. Atazanavir does not have an impact score in our 2010 ORS, but for the sake of practicing the calculation, we will assume that Atazanavir had an impact score of 12,231.24.

Company	DALYs Saved
Bristol-Myers Squibb	$63.42\% \times 12,231.24 = 7,756.93$
Emcure Pharmaceuticals Ltd.	$36.59\% \times 12,231.24 = 4,474.31$

4. Finally, we can calculate the cost effectiveness for each company by dividing the DALY impact score by the total price paid for the drug by each manufacturer.

Company	DALYs Saved	Total Price Paid	Cost Effectiveness
Bristol-Myers Squibb	7,757.05	\$1,869,663.36	$\frac{7,757.05}{\$1,869,663.36} = 0.0041489$
Emcure Pharmaceuticals Ltd.	4,475.41	\$478,010.79	$\frac{4,475.41}{\$478,010.79} = 0.0093625$

IV. Assumptions

Data	Column/Range	Value Assumed
Daily Dose	I:I on <i>Original Data</i> sheet	Daily dose information is not always readily available, especially since drugs are available in different dosages and delivery methods. Therefore, we currently estimate daily doses using online sources and information on shipping dosages and recommendations for treatment dosages. A summary of the daily dose calculations is found here .

