HIV CALCULATION

Spreadsheet Documentation

Definitions

- WHO region: designated regions provided by the World Health Organization[1]
- DALY: Disability-Adjusted Life Years (D)
  - Years of life taken by disease from population if it was in a healthy state free from disease
- Treatment Coverage (θ):
  - Ratio between number of people receiving treatment to the estimated number of people needing treatment
- Efficacy (e):
  - Percentage of population receiving treatment that were actually cured
- Data generated from WHO, UNAID database

[1]*http://www.who.int/neglected_diseases/preventive_chemotherapy/sch/en/*

Impact Formula

$$I = \frac{D * e * \Theta}{1 - e * \Theta} \Big/ n$$

- Where:
  - *D* = DALYs
  - *e* = Efficacy
  - *Θ* = Treatment Coverage
  - n = Number of drugs present in regimen

Country Data

- Column A: Country
- Column B: Countries sorted by WHO Region
- Column C: Population
- Column D: Geographical Region
  - E.g: AMR = "Central America," "Latin America"
- Column E: WHO Group
  - Group A= Low and middle income countries outside the Americas (AFR, EUR, SEA, WPR)
  - Group B= Low and middle income countries within the Americas (AMR)

	A	B	C	D	E
	Country	WHO Region	Population	Geographical Region	WHO Group
	Afghanistan	EMR	28,803,167	East, South and South-East Asia	A
	Albania	EUR	2,913,021	Europe and Central Asia	A
	Algeria	AFR	36,117,637	Middle East and North Africa	A
	American Samoa	WPR	55,637		A
	Andorra	EUR	84,449		A
	Angola	AFR	23,369,131	Sub-Saharan Africa	A
	Anguilla	AMR	16,373		B
	Antigua and Barbuda	AMR	94,661		B
	Argentina	AMR	41,223,889	Latin America and the Caribbean	B
	Armenia	EUR	2,877,311	Europe and Central Asia	A
	Aruba	AMR	101,669		B

DALY Data

- Column F: DALYs
- Column G: Adult DALYs (age 15+)
- Column H: Children DALYs (age <15)
- Column I: Retention Rate (max set to 97.14%)
- Column J: Adult Retention Rate (max set to 97.14%)
- Column K: Children Retention Rate (max set to 97.14%)

	F	G	H	I	J	K
	DALY	Adult DALYs	Children DALYs	Retention Rate — max of retention rate and 97.14	Retention Rate (ADULT) — max of retention rate and 97.14	Retention Rate (CHILDREN) — max of retention rate and 97.14
	24,041.45	21,733.66	2,307.78	96.00	96	97
	2,035.05	1,855.64	179.41	97.14	97	97
	48,627.20	44,733.20	3,894.00	75.00	97	97
	0.00			97.14	97	97
	0.00			97.14	97	97
	664,303.09	459,335.19	204,967.90	69.00	69	97
	0.00			97.14	97	97
	398.28	334.50	63.77	86.00	87	82
	90,351.03	84,815.85	5,535.18	97.14	97	97
	6,542.66	6,516.07	26.59	81.00	82	75
	0.00			97.14	97	97
	8,155.93	7,791.96	363.96	97.14	97	97
	3,843.56	3,710.83	132.73	97.14	97	97
	7,728.93	7,707.24	21.69	79.00	78	97
	0.00			71.00	73	33

Treatment Coverage Data

Data extracted from databases and studies if available. If no data on a country level exists, efficacy data from countries with data will be averaged.

- **Column L:** Population receiving treatment
- **Column M:** Population needing treatment
- **Column N:** Treatment Coverage (θ)
      = Col L/ Col M

L	M	N
	Overall (Adults & Children)	
# Receiving Treatment	# Needing Treatment	% Treatment Coverage
		=Col L / Col M
46	1,600	2.88%
145		0.00%
2,012	6,200	32.45%
		42.18%
		42.18%
27,931	86,000	32.48%
		42.18%
153		42.18%
43,313	55,000	78.75%
250	1,000	25.00%
		42.18%
11,120		42.18%
3,163		0.00%
435	1,400	31.07%
		42.18%

Age Group Data (Children)

· **Column R:** Population receiving treatment

· **Column S:** Population needing treatment

· **Column T:** Treatment Coverage (θ)

    = Col R/ Col S

R	S	T
	Children	
# Receiving Treatment	# Needing Treatment	% Treatment Coverage
452,651		=Col R / Col S
1	550	0.18%
12		100.00%
106	500	21.20%
		26.96%
		26.96%
1,916	20,000	9.58%
		26.96%
		26.96%
1,286	3,300	38.97%
10	100	10.00%
		26.96%
		26.96%
		100.00%
9	100	9.00%
		26.96%

Age Group Data (Children)

- Example: In Afghanistan, 1/550 [R5/S5], or 0.18% of children needing HIV treatment are receiving treatment.

=IF((IFERROR(($R5/$S5),IFERROR(VLOOKUP($D5,$BB$16:$BG$27,6,FALSE),$BG$18))>1),1,IFERROR(($R5/$S5),IFERROR(VLOOKUP($D5,$BB$16:$BG$27,6,FALSE),$BG$18)))

- The command states to divide R5 by S5, if the value in the 6th column in the range BB16:BG27 that corresponds to cell D5 (East, South and South-East Asia) is greater than 1. Otherwise, use global average (BG18).

	A	R	S	T
1				
2			Children	
3	Country	# Receiving Treatment	# Needing Treatment	% Treatment Coverage
4		452,651		=Col R / Col S
5	Afghanistan	1	550	0.18%
6	Albania	12		100.00%
7	Algeria	106	500	21.20%
8	American Samoa			26.96%
9	Andorra			26.96%
10	Angola	1,916	20,000	9.58%
11	Anguilla			26.96%
12	Antigua and Barbuda			26.96%
13	Argentina	1,286	3,300	38.97%
14	Armenia	10	100	10.00%
15	Aruba			26.96%

BB	BC	BD	BE	BF	BG
Treatment Coverage By Region, Age Group & Sex (2010 data)				Fallback % for missing data (Columns N, Q, T)	
Region	Overall	Children	Women	Overall	Children
Global	47.00%	23.00%	48.00%	42.18%	26.96%
Sub-Saharan Africa	49.00%	21.00%	50.00%	50.24%	22.54%
Eastern & Southern Africa	56.00%	26.00%	64.00%	42.18%	26.96%
Western & Central Africa	30.00%	9.00%	18.00%	42.18%	26.96%
Latin America and the Caribbean	63.00%	39.00%	59.00%	100.00%	100.00%
Latin America	64.00%	44.00%	64.00%	42.18%	26.96%
The Caribbean	60.00%	25.00%	46.00%	42.18%	26.96%
East, South and South-East Asia	39.00%	39.00%	16.00%	25.10%	76.11%
Europe and Central Asia	23.00%	65.00%	79.00%	0.00%	100.00%
Middle East and North Africa	10.00%	5.00%	4.00%	0.00%	0.00%

Age Group Data (Adults)

- **Column O:** Population receiving treatment

    = Col L - Col R

- **Column P:** Population needing treatment

    = Col M – Col S

- **Column Q:** Treatment Coverage (θ)

    = Col O/ Col P

O	P	Q
Adults		
# Receiving Treatment	**# Needing Treatment**	**% Treatment Coverage**
=Col L - Col R	*=Col M - Col S*	*=Col O / Col P*
45	1,050	4.29%
133		0.00%
1,906	5,700	33.44%
		42.18%
		42.18%
26,015	66,000	39.42%
		42.18%
153		42.18%
42,027	51,700	81.29%
240	900	26.67%
		42.18%
11,120		42.18%
3,163		0.00%
426	1,300	32.77%
		42.18%
		42.18%
442	1,250	35.36%

WHO Group Data

- **Column AM:** List of Group A Countries
  - Outside the Americas (AFR, EMR, EUR, SEA, WPR)
- **Column AN:** List of Group B Countries
  - Within the Americas (AMR)

	AM	AN
	Group A Low- and Middle-Income Countries excluding region of the Americas *46 COUNTRIES*	**Group B** Low- and Middle-Income Countries in the Americas *20 COUNTRIES*
	Afghanistan	Anguilla
	Bangladesh	Antigua and Barbuda
	Belarus	Argentina
	Bhutan	Belize
	Bostwana	Bolivia
	Burkina Faso	Brazil
	Burundi	Chile
	Cambodia	Cuba
	Cameroon	Dominican Republic
	Central African Republic	Ecuador
	China	El Salvador
	Democratic Republic of the Congo	Grenada
	Gambia	Guyana
	Ghana	Honduras
	Guatemala	Nicaragua
	India	Panama
	Iran	Paraguay

Antiretroviral Treatment Breakdown

- **Column AP:** Regimens for adults or children (1st, 2nd or 3rd)
- **Column AQ:** Percentage of adults/children receiving that line of treatment in Group A countries
- **Column AR:** Percentage of adults/children receiving that line of treatment in Group B countries
- E.g: Of all the people in Group A countries receiving HIV treatment, 93% are adults and 7% are children. Of the adults receiving treatment, 97.1% are using 1st line regimens, 2.9% are using 2nd line, and 0.05% are using 3rd line.

AP	AQ	AR
	Group A	Group B
Antiretroviral Treatment Breakdown Summary	92.76%	7.24%
ADULTS	93.00%	97.00%
First-Line Regimens	97.10%	69.10%
Second-Line Regimens	2.90%	27.80%
Third-Line Regimens	0.05%	3.10%
CHILDREN	7.00%	3.00%
First-Line Regimens	96.80%	72.10%
Second-Line Regimens	3.20%	24.90%
Third-Line Regimens	0.01%	3.00%

HIV Efficacy Data

- **Column AT:** 1st and 2nd line adult and children regiments for Group A countries
- **Column AU:** proportion using specific regiment out of all 1st/2nd adult and children regiments
- **Column AV:** Efficacy of regimen
- **Column AW-AY:** Same as AT-AV for Group B countries
- E.g: Recall that 97.1% of adults in Group A countries use first-line regimens. 27.7% of those first-line regimens are d4T + 3TC + NVP. This regimen has an estimated efficacy of 72.01%

	AT	AU	AV	AW	AX	AY
	Group A			Group B		
		72.03%				
	Treatment Regimen	Proportion (%)	Efficacy (%)	Treatment Regimen	Proportion (%)	Efficacy (%)
	ADULTS			ADULTS		
	First-Line Regimens	100.00%		First-Line Regimens	100.00%	
	d4T + 3TC + NVP	27.70%	72.01%	AZT + 3TC + EFV	42.50%	71.50%
	AZT + 3TC + NVP	26.80%	77.00%	AZT + 3TC + LPV/r	13.60%	50.00%
	d4T + 3TC + EFV	14.00%	84.00%	AZT + 3TC + NVP	12.00%	77.00%
	AZT + 3TC + EFV	11.40%	73.67%	AZT + 3TC + ATV/r	6.40%	78.00%
	TDF + 3TC + EFV	10.60%	76.67%	TDF + FTC + EFV	6.20%	87.25%
	TDF + FTC + EFV	3.50%	76.40%	ABC + 3TC + EFV	2.60%	73.70%
	TDF + 3TC + NVP	2.70%	75.00%	d4T + 3TC + NVP	2.10%	75.78%
	TDF + FTC + NVP	2.50%	66.93%	d4T + 3TC + EFV	1.80%	78.00%
	Others	0.80%	72.01%	Others	12.90%	75.78%
		75.81%			71.52%	
	Second-Line Regimens	100.00%		Second-Line Regimens	100.00%	
	TDF + 3TC + LPV/r	27.10%		TDF + 3TC + EFV	18.10%	78.20%
	AZT + ddl + LPV/r	25.00%		TDF + 3TC + LPV/r	16.60%	
	AZT + 3TC + LPV/r	12.70%	50.00%	TDF + 3TC + ATV/r	13.40%	65.00%
	TDF + FTC + LPV/r	10.70%	67.50%	AZT + 3TC + LPV/r	3.90%	50.00%
	AZT + 3TC + TDF + LPV/r	5.50%		AZT + 3TC + TDF + LPV/r	3.00%	
	ABC + ddl + LPV/r	4.80%		d4T + 3TC + EFV	2.60%	78.00%
	ABC + TDF + LPV/r	2.50%		d4T + 3TC + LPV/r	2.20%	
	d4T + 3TC + LPV/r	1.90%		TDF + 3TC + NVP	1.70%	65.50%
	ABC + 3TC + LPV/r	1.10%	63.00%	AZT + 3TC + TDF + ATV/r	1.40%	
	Others	8.70%		Others	37.00%	
		14.27%			27.96%	
	CHILDREN			CHILDREN		
	First-Line Regimens	100.00%		First-Line Regimens	100.00%	
	d4T + 3TC + NVP	34.90%	50.00%	AZT + 3TC + EFV	32.10%	69.25%
	AZT + 3TC + NVP	20.70%	77.00%	AZT + 3TC + LPV/r	26.70%	50.00%
	d4T + 3TC + EFV	15.60%	78.00%	AZT + 3TC + NVP	17.50%	77.00%
	AZT + 3TC + EFV	7.20%	69.25%	AZT + 3TC + NFV	3.50%	50.00%
	ABC + 3TC + EFV	6.20%	73.70%	AZT + ddl + LPV/r	3.30%	50.00%
	d4T + 3TC + LPV/r	5.90%	50.00%	AZT + ddl + EFV	2.60%	50.00%
	ABC + 3TC + LPV/r	5.80%	63.00%	Others	14.40%	50.00%
	ABC + 3TC + NVP	1.70%	50.00%			
	Others	1.50%	50.00%			
		63.32%			60.95%	
	Second-Line Regimens	100.00%		Second-Line Regimens	100.00%	
	ABC + 3TC + LPV/r	26.20%	63.00%	AZT + 3TC + EFV	32.10%	69.25%
	AZT + ddl + LPV/r	17.20%		AZT + 3TC + LPV/r	26.70%	50.00%
	ABC + ddl + LPV/r	14.80%		AZT + 3TC + NVP	17.50%	77.00%
	AZT + 3TC + LPV/r	12.30%	50.00%	AZT + 3TC + NFV	3.50%	
	AZT + ddl + EFV	6.60%		AZT + ddl + LPV/r	3.30%	
	d4T + 3TC + LPV/r	4.60%		AZT + ddl + EFV	2.60%	
	TDF + 3TC + LPV/r	2.00%		Others	14.40%	
	AZT + ABC + 3TC + LPV/r	1.60%				
	d4T + 3TC + ABC	1.40%				
	Others	13.30%				
		22.66%			49.05%	

HIV Efficacy Data

- Efficacy data is color coded in cases where data can not be found.

- There are cases where no suitable fallback data is available. These regimens are disregarded in the calculation of the final impact score.

RULES AND ASSUMPTIONS FOR COLUMNS AV AND AY		
Priority	**Determination**	**Key**
#1	Original Data Point(s)	Blue
#2	Average of all original data points of that regimen	Pink
#3	Average of all data points in that specific quadrant (e.g. First line Regimens for Adults in Group A countries)	Cyan

Treatment Length

- Treatment length is calculated using the formula: **(100/(100-x))**, where x is retention rate

- Retention rate is set at a maximum of 97.14 because antiretrovirals are calculated to extend life expectancy by 35 years. A retention rate of above 97.14 will cause treatment length to be greater than our assumed maximum threshold of 35 years.

Retention Rate
max of retention rate and 97.14
96.00
97.14
75.00
97.14
97.14
69.00
97.14

Impact Score Calculation

	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK
						Impact Scores							
	Impact of 3TC	Impact of ABC	Impact of AZT	Impact of ddI	Impact of d4T	Impact of EFV	Impact of FTC	Impact of LPV/r	Impact of NVP	Impact of TDF	Impact of ATV/r	Impact of NFV	Overall Treatment Impact
Row 4	1,210,432.27	14,114.27	503,417.77	51.80	539,861.48	505,527.31	66,578.48	20,914.82	745,182.40	217,274.49	3,012.72	30.75	3,826,398.56
	8.66	0.01	3.56	0.00	3.87	3.76	0.55	0.06	5.40	1.78	0.00	0.00	27.64
	1.19	0.14	0.40	0.00	0.63	0.37	0.00	0.13	0.67	0.00	0.00	0.00	3.53
	949.83	5.71	388.96	0.00	428.46	399.90	55.63	10.09	594.47	181.33	0.00	0.00	3,014.37
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	14,997.10	164.27	6,101.19	0.00	6,808.11	6,229.02	835.96	222.29	9,352.68	2,730.42	0.00	0.00	47,441.04
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3.64	0.09	2.95	0.02	0.17	2.41	0.25	0.47	0.63	0.69	0.39	0.01	11.72
	351.40	8.80	280.61	0.44	17.44	242.30	25.34	38.69	56.37	70.33	39.56	0.26	1,131.55
	79.28	0.04	32.71	0.00	35.49	33.92	4.90	0.47	49.80	15.95	0.00	0.00	252.55
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	23.71	0.08	9.76	0.00	10.67	9.97	1.40	0.20	14.92	4.58	0.00	0.00	75.29
	0.88	0.10	0.30	0.00	0.46	0.27	0.00	0.09	0.50	0.00	0.00	0.00	2.61
	128.52	0.05	53.08	0.00	57.58	54.76	7.89	0.74	80.91	25.71	0.00	0.00	409.23
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

- **Column Y-AJ:** Impact Score per Drug
  - Row 4: Total Impact Sum
- **Column AK:** Overall treatment impact per Country

- In addition, we must multiply three variables:
  - Percentage of adult/children using 1st, 2nd or 3rd line regiment (Columns AQ-AR)
  - Proportion of adults/children using regimen Y that includes drug X (Column AU/AX depending on group)
  - Efficacy of regimen Y that includes drug X (Column AV/AY depending on group)

Patent Holder Rankings

- **Column BB:** Originator Company

- **Column BC:** Drug(s) patented by company

- **Column BD:** Final impact of company

Example: GlaxoSmithKline (GSK) produced the drugs ABC and AZT. The sum of the impacts of those specific drugs (=$Z$4+$AA$4), is the impact that GSK has on global HIV drug treatment. According to the model, GSK saves 519,926.58 years of life with its patented drugs, and ranks fourth on the list.

Originator Company	Drug(s)	Final Impact	
Shire Pharmaceuticals	3TC	1,210,432.27	1
Boehringer Ingelheim	NVP	745,182.40	2
GlaxoSmithKline	ABC, AZT	519,926.58	4
Bristol-Myers Squibb	ddI, d4T, ATV/r	542,926.00	3
Merck	EFV	505,527.31	5
Gilead Sciences, Inc	FTC, TDF	283,852.97	6
Abbot Laboratories	LPV/r	20,914.82	7
Pfizer	NFV	30.75	8
Overall Impact for HIV drugs		**3,828,793.10**	

Manufacturer Rankings

Our impact scores can be used to assess the performance of companies involved in the manufacturing sector of the pharmaceutical industry. Manufacturing and distribution data provided by the WHO provides important information such as cost, drug strength, and the total number of units (TNU) of each drug that are involved in shipments of a variety of medicines.

This data can be used to determine the proportion of certain classes of drugs that each manufacturer in the database is responsible for shipping.

[2]*https://www.who.int/hiv/amds/gprm/en/*

Manufacturer Rankings

We are able to calculate the lives saved from individual shipments of drugs so that the total number of lives saved by manufacturer can be determined. The calculation that is used is:

TNU / (365 * DD)

Where:

- TNU = total number of units, or, number of pills sent in a specific order
- DD = the daily dose, or the assumed average maintenance dose per day for a drug

This allows us to calculate the total lives saved due to a single drug or the total lives saved for that drug due to an individual manufacturer. We can use the proportion of total lives saved by a manufacturer to estimate the proportion of the total impact that will be attributed to that company in terms of DALYs.

Manufacturer Rankings

The WHO's Global Price Reporting Mechanism allows us to track 23 manufacturers of drugs that target HIV. We track six HIV drugs that Aspen Pharamcare manufactures: Lamivudine (3TC), Nevirapine (NVP), Stavudine, (d4t), Tenofovir (TDF), Darunavir (DRV), and Zidovudine (AZT). Let's calculate the DALYs saved by 3TC:

Using our formula we find that, in 2013, 3TC alone saved a total of 428,959.86 lives. If we sum the lives saved by all regimens containing 3TC we get 9,075,145.47. We can also see that all regimens containing 3TC produced by Aspen Pharamcare were calculated to have saved 265,368.82 lives. This means that Aspen Pharamcare's 3TC contributed 2.92% of all lives saved by 3TC.

We also know from our previous calculations that 3TC alleviates 1,657,585.18 DALYs globally. Therefore, we can state that **3TC produced by Aspen Pharamcare alleviates 48,469.90 DALYs.**

Manufacturer Rankings

The same process can be repeated for the drugs NVP, d4T, TDF, and AZT.

    NVP: 400.29 DALYs alleviated

    d4T: 9,559.60 DALYs alleviated

    TDF: 359.31 DALYs alleviated

    AZT: 1,067.81 DALYs alleviated

Summing the DALYs alleviated by all five drugs yields **59,856.91, which can be considered Aspen Pharamcare's global impact on HIV in 2013.**

Example: Drug Score

Impact of AZT in Benin in 2013

Let's calculate the impact of the drug AZT in Benin in 2013. Recall that Benin is labeled as a Group A country in the EMR region. We will first retrieve Benin's DALY and treatment coverage data for adults and children.

- Adult DALYs
  - **106,998.33**

- Adult Treatment Coverage
  - **38.82%**

- Children DALYs
  - **40,703.47**

- Child Treatment Coverage
  - **21%**

Example: Drug Score *(continued)*

ADULTS	Regimen	Proportion	Efficacy
First-line (85.43%)	AZT + 3TC + NVP	32.00%	81.93%
	AZT + 3TC + EFV	11.40%	75.75%
Second-line (14.57%)	AZT + 3TC + LPV/r	19.40%	50.00%
	AZT + ABC + 3TC + LPV/r	N/A	74.18%
	AZT + ddI + LPV/r	N/A	74.18%
	AZT + 3TC + TDF + LPV/r	5.80%	74.18%
	TDF + AZT + LPV/r	2.30%	74.18%
Children	Regimen	Proportion	Efficacy
First-line (82.10%)	AZT + 3TC + NVP	48.80%	81.93%
	AZT + 3TC + EFV	10.40%	70.67%
Second-line (17.90%)	AZT + 3TC + LPV/r	18.30%	50.00%
	AZT + ABC + 3TC + LPV/r	3.90%	83.40%
	AZT + ddI + LPV/r	3.70%	83.40%
	AZT + 3TC + TDF + LPV/r	N/A	83.40%
	TDF + AZT + LPV/r	N/A	83.40%

The next step is to retrieve efficacy data. Recall that to accurately measure efficacy for a drug regimen we must multiply by it by the proportion of individuals receiving the respective type of regimen (1st, 2nd, or 3rd) and the proportion of individuals receiving the respective regimen. This table is displaying regimens that include d4t in Group A countries.

Example: Drug Score *(continued)*
Impact of AZT in Benin in 2013

We will calculate the impact of the first Group A regimen that contains d4t: **AZT + 3TC + NVP**. This regimen targets adults so we will plug in adult DALYs, treatment coverage, and efficacy. We are dividing by 3 because there are three drugs in this regimen.

$$I = \frac{106{,}998.33 * 38.82\% * 96.24\% * 32\% * 81.93\%}{1 - 38.82\% * 96.24\% * 32\% * 81.93\%} \ / \ 3$$

$$I = 3{,}873$$

Example: Drug Score *(continued)*

ADULTS	Regimen	Impact
First-line (85.43%)	AZT + 3TC + NVP	3,873
	AZT + 3TC + EFV	1,189
Second-line (14.57%)	AZT + 3TC + LPV/r	8.85
	AZT + ABC + 3TC + LPV/r	37.93
	AZT + ddI + LPV/r	N/A
	AZT + 3TC + TDF + LPV/r	16.81
	TDF + AZT + LPV/r	8.88
Children	Regimen	Impact
First-line (82.10%)	AZT + 3TC + NVP	1,197
	AZT + 3TC + EFV	205.2
Second-line (17.90%)	AZT + 3TC + LPV/r	9
	AZT + ABC + 3TC + LPV/r	11.43
	AZT + ddI + LPV/r	14.46
	AZT + 3TC + TDF + LPV/r	N/A
	TDF + AZT + LPV/r	N/A

This calculation is repeated for each regimen that includes AZT and that is classified as regimens used in Group A countries. This includes all subgroups such as 1st or 2nd line treatments that are used to treat adults, or used to treat children.

Example: Drug Score *(continued)*
Impact of AZT in Benin in 2013

This process is repeated for all regimens, including the variations in data for adults and children. We can now sum the impact of AZT in each regimen for all patient and country groups. This yields **6,571.56**. The next step is to divide this sum by the Benin's converted retention rate.

$$(100 / 100 - 97.14) = 35$$

$$6571.56 / 35 = \mathbf{187.75}$$

The overall **impact of AZT in Benin in 2013 is 187.75.**

Example: Country Score
Impact of HIV drugs in Benin in 2013

Benin administers regimens that contain the following ten drugs: **3TC, ABC, AZT, ddl, d4t, EFV, FTC, LPV/r, NVP, TDF**. Recall the process used to derive AZT's impact in Benin. To find the impact of all HIV drugs in Benin we need to repeat this process for the nine remaining drugs. The table below displays the final impact of all ten drugs.

3TC	ABC	AZT	ddl	d4t	EFV	FTC	LPV/r	NVF	TDF
360.24	4.84	187.47	0.88	126.54	99.66	33.71	9.36	286.06	76.83

Summing the impact of all drugs results in **1,185.57, the impact of all HIV drugs in Benin in 2013.**

Example: Disease Score
Impact of HIV drugs in 2013

To calculate the impact of all HIV drugs in 2013 we simply apply the steps used to find the impact of HIV drugs in Benin to all remaining countries. We sum the resulting outputs to obtain **5,469,262.43, the global impact of HIV drugs in 2013.**

Example: Company Score
Impact of GlaxoSmithKline on HIV in 2013

GlaxoSmithKline produces the drugs **ABC** and **AZT**. Recall the process taken to derive a single drug's impact score in a specific country. We now need to sum the impact of these drugs in every country they are administered to derive **GlaxoSmithKline's global impact on HIV in 2013**.

Drug	Global Impact (2013)
ABC	23,397.50
AZT	864,338.42

23,397.50 + 864,338.42 = **887,735.92 can be considered the global impact of GlaxoSmithKline in 2013.**