

Estimated cost-based generic prices for baricitinib

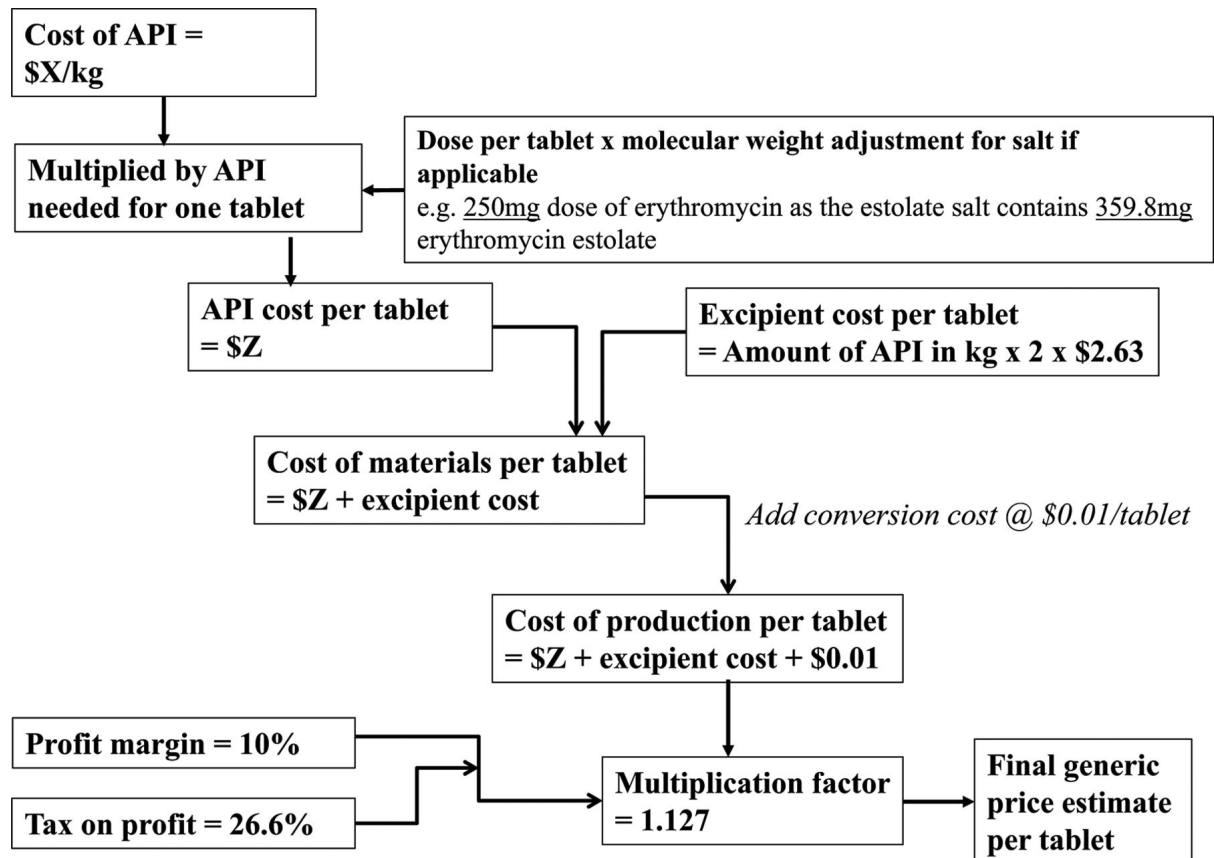
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Methodology

Methods followed are those reported in our earlier work.^a

A figure outlining the estimation formula for a solid oral dosage form medicine is copied below.

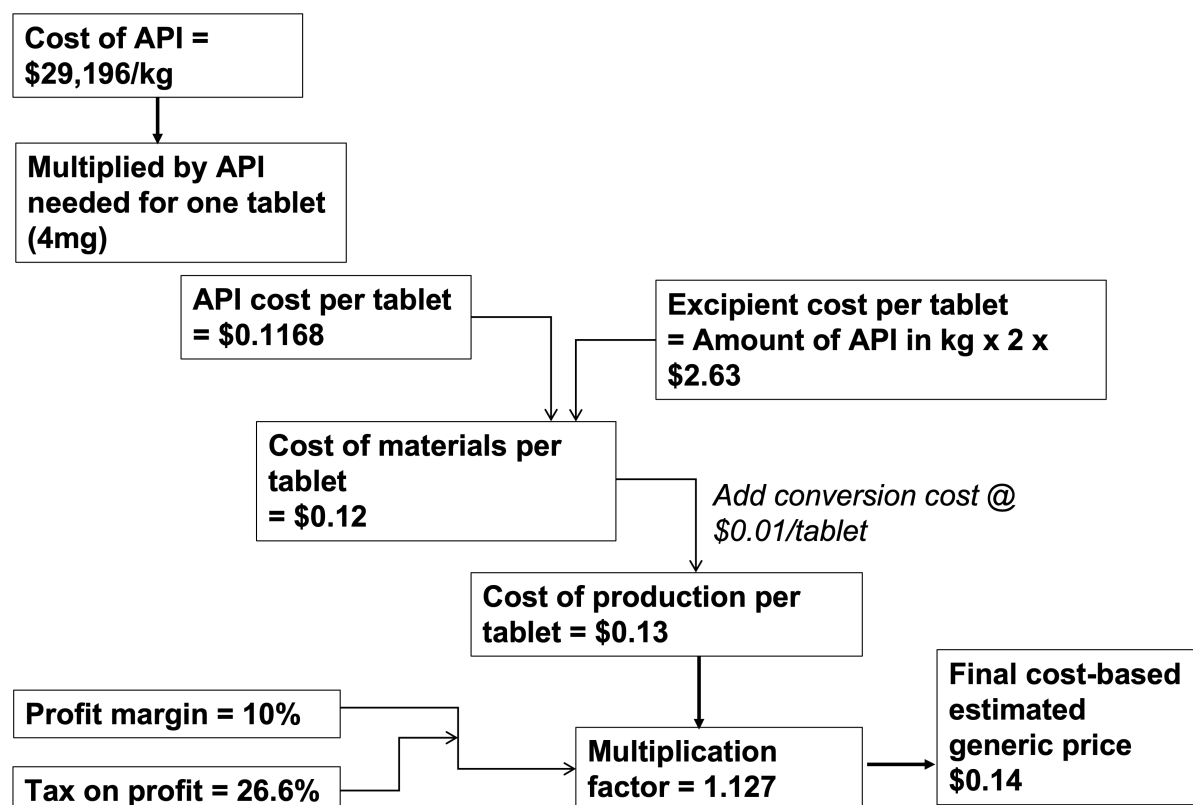


In order to identify shipments of API, a proprietary export/import database (Panjiva) was searched for the word 'baricitinib' in the shipment description, for dates between 2016 and Nov 30 2021, shipments 1) exported from India and 2) imported from the United States, Mexico, Costa Rica, Panama, Bolivia, Brazil, Chile, Colombia, Ecuador, India, Paraguay, Peru, Uruguay, Venezuela, China, India, Indonesia, Pakistan, Sri Lanka, and Philippines.^b

Results

After data cleaning,^c five shipments of API were identified, amounting to 4.5 kg of API. This data suggests an API market price of US\$29,196/kg.

Assumed treatment regimen is 4mg baricitinib administered orally once daily for 14 days (14 doses total), sourced from WHO Therapeutics and COVID-19 living guidance.^d



Assuming current API market prices:

Cost of production – 4mg baricitinib tablet	\$0.13
Cost of production – 14 day treatment course	\$1.78
Estimated generic price per tablet – (cost of production + 10% profit margin, and 26.6% tax on profit)	\$0.14
Estimated generic price per 14 day treatment course– (cost of production + 10% profit margin, and 26.6% tax on profit)	\$2.00

Analysis

WHO issued a “strong recommendation” for baricitinib for patients with severe or critical COVID-19 on 14 January 2022. Transparency in the cost of production may be helpful as health systems seek to purchase the medicine.

The amount of API in the shipments captured is relatively small (4.5kg) in absolute terms. However, the dosage of baricitinib is low (4mg), and therefore the total volume of shipments nevertheless represents a significant quantity of API for this drug (enough to manufacture 612,500 4 mg pills or 43,650 treatment courses for COVID-19).

Eli Lilly’s list price of \$1,109.92 per 14 day treatment course of baricitinib 4mg is 555x the cost-based estimated generic price (\$2.00). (This assumes bottles can be split across patients; Eli Lilly’s product usually is packaged in bottles of 30 or 28 tablets.)

Baricitinib is already approved for rheumatoid arthritis. Global prices range widely.

Baricitinib 4mg tablet prices, by country

Country	Generic?	Price – local currency	Price per pill (\$US)	Price per 14 day treatment course (\$US)
India ^e	Yes - Natco	INR 30 per tab	\$0.41	\$5.74
Bangladesh ^f	Yes- Beximco	BDT 40.00 per tab	\$0.47	\$6.58
France ^g	No – Eli Lilly	EUR 651.15 (28 tabs)	\$26.57	\$371.98
United Kingdom ^h	No – Eli Lilly	GBP 805.56 (28 tabs)	\$39.38	\$551.32
Denmark ⁱ	No – Eli Lilly	DKK 8818.35 (28 tabs)	\$48.36	\$677.04
United States (VA) ^j	No – Eli Lilly	Not available in 4mg. Assuming 2x2mg. USD 1,763.04 (30 2mg tabs)	\$58.77	\$822.78
Argentina ^k	No – Eli Lilly	ARS 184,100.84 (28 tabs)	\$63.32	\$886.48
List price	No – Eli Lilly	USD 2,378.40 (30 tabs)	\$79.28	\$1,109.92

^a Hill AM, Barber MJ, Gotham D. Estimated costs of production and potential prices for the WHO Essential Medicines List. *BMJ Global Health* 2018; **3**: e000571. ;
Gotham D, Barber MJ, Hill AM. Estimation of cost-based prices for injectable medicines in the WHO Essential Medicines List. *BMJ Open* 2019; **9**: e027780.

^b Not all import data sources available for all dates.

^c See Appendix for details on approach to data cleaning, available here:

<https://gh.bmj.com/content/bmjgh/3/1/e000571/DC1/embed/inline-supplementary-material-1.pdf?download=true>

^d <https://app.magicapp.org/#/guideline/nBkO1E/rec/E5AOaN>

^e <https://medicaldialogues.in/news/industry/pharma/natco-pharma-launches-baricitinib-in-india-without-patent-waiver-approval-77354>

^f <https://medex.com.bd/brands/31905/barri-4mg>

^g <https://base-donnees-publique.medicaments.gouv.fr/extrait.php?specid=61751780>

^h <https://bnf.nice.org.uk/medicinal-forms/baricitinib.html>

ⁱ <https://www.medicinpriser.dk/Default.aspx>ⁱ <https://clinicaltrials.gov/ct2/show/NCT04575597>

^j <https://www.vendorportal.ecms.va.gov/nac/Pharma/List>

^k <https://servicios.pami.org.ar/vademecum/views/consultaPublica/listado.zul>