

Appendix

Table 2. Estimated API price per kilogram, current prices, and estimated generic prices, by WHO EML therapeutic category.

| Medicine | Unit | API price/kg | UK unit price (ratio to estimated generic price) | SA unit price (USD cents) | India unit price (USD cents) | Estimated generic price (USD cents) |
|--|---------------------------------|--------------|--|---------------------------|------------------------------|-------------------------------------|
| Anaesthetics | | | | | | |
| midazolam | tablet (7.5mg) | \$5,256 | | 11.6¢ | 51.8¢ ^P | 5.6¢ |
| midazolam | tablet (15mg) | \$5,256 | | 23.3¢ | 10.4¢ ^P | 10.0¢ |
| Medicines for pain and palliative care | | | | | | |
| acetylsalicylic acid | tablet (100mg) | \$5 | | | 0.2¢ ^P | 1.2¢ |
| acetylsalicylic acid | tablet (200mg) | \$5 | | | | 1.4¢ |
| acetylsalicylic acid | tablet (300mg) | \$5 | 1.0¢* (0.7x) ^{BNF} | | 0.5¢ ^{TN} | 1.5¢ |
| acetylsalicylic acid | tablet (400mg) | \$5 | | | | 1.6¢ |
| acetylsalicylic acid | tablet (500mg) | \$5 | | | 0.6¢ ^P | 1.7¢ |
| amitriptyline | tablet (10mg) | \$49 | 0.7¢* (0.5x) ^{EMIT} | 1.8¢ | 0.4¢ ^P | 1.2¢ |
| amitriptyline | tablet (25mg) | \$49 | 0.9¢* (0.7x) ^{EMIT} | 0.7¢ | 0.3¢ ^{TN} | 1.3¢ |
| amitriptyline | tablet (75mg) | \$49 | 2.6¢* (1.6x) ^{EMIT} | 2.2¢ | 0.8¢ ^{TN} | 1.6¢ |
| codeine | tablet (30mg) | | 4.5¢ ^{BNF} | 23.0¢ | 7.5¢ ^P | |
| cyclizine | tablet (50mg) | \$84 | 6.1¢* (3.8x) ^{EMIT} | | | 1.6¢ |
| dexamethasone | tablet (2mg) | \$1,482 | 18.5¢* (12.7x) ^{BNF} | | 0.7¢ ^{TN} | 1.5¢ |
| dexamethasone | tablet (4mg) | \$1,482 | 37.0¢* (20.6x) ^{BNF} | | 1.4¢ ^{TN} | 1.8¢ |
| diazepam | tablet (5mg) | \$131 | 0.8¢* (0.7x) ^{EMIT} | 0.7¢ | 0.2¢ ^{TN} | 1.2¢ |
| diazepam | tablet (10mg) | \$131 | 1.1¢* (0.8x) ^{EMIT} | 1.4¢ | 0.4¢ ^{TN} | 1.3¢ |
| docusate sodium | capsule (100mg) | \$11 | 9.1¢* (6.9x) ^{BNF} | | 1.5¢ ^P | 1.3¢ |
| fluoxetine | SODF (20mg) | \$71 | 1.2¢* (0.9x) ^{EMIT} | 1.0¢ | 0.4¢ ^{TN} | 1.3¢ |
| haloperidol | SODF (0.5mg) | \$331 | 5.1¢* (4.5x) ^{BNF} | 7.6¢ | 1.2¢ ^P | 1.1¢ |
| haloperidol | SODF (2mg) | \$331 | | 30.5¢ | 2.9¢ ^P | 1.2¢ |
| haloperidol | SODF (5mg) | \$331 | 4.6¢* (3.5x) ^{EMIT} | 1.5¢ | 0.3¢ ^{TN} | 1.3¢ |
| ibuprofen | tablet (200mg) | \$10 | 0.8¢* (0.5x) ^{EMIT} | 0.7¢ | 0.3¢ ^{TN} | 1.5¢ |
| ibuprofen | tablet (400mg) | \$10 | 2.4¢* (1.3x) ^{BNF} | 1.4¢ | 0.6¢ ^{TN} | 1.8¢ |
| ibuprofen | tablet (600mg) | \$10 | 1.5¢* (0.7x) ^{EMIT} | 2.1¢ | 0.9¢ ^{TN} | 2.2¢ |
| loperamide | SODF (2mg) | \$234 | 7.0¢* (5.9x) ^{EMIT} | 1.1¢ | 0.2¢ ^{TN} | 1.2¢ |
| metoclopramide | SODF (10mg) | \$77 | 1.3¢* (1.0x) ^{EMIT} | 0.4¢ | 0.4¢ ^P | 1.2¢ |
| midazolam | SODF (7.5mg) | \$5,256 | | 46.5¢ | 51.8¢ ^P | 5.6¢ |
| midazolam | SODF (15mg) | \$5,256 | | 23.3¢ | 10.4¢ ^P | 10.0¢ |
| morphine | slow-release tablet (10mg) | | 8.3¢ ^{BNF} | 12.0¢ | 4.6¢ ^P | |
| morphine | slow-release tablet (100mg) | | 61.8¢ ^{BNF} | 64.1¢ | 97.5¢ ^P | |
| morphine | slow-release tablet (200mg) | | 176.2¢ ^{BNF} | 128.3¢ | 195.0¢ ^P | |
| morphine | tablet (30mg) | | 20.0¢ ^{BNF} | 36.1¢ | 8.3¢ ^P | |
| morphine | tablet (60mg) | | 39.1¢ ^{BNF} | 120.5¢ | 30.0¢ ^P | |
| morphine | immediate-release tablet (10mg) | | 12.3¢ ^{BNF} | | 4.6¢ ^P | |
| ondansetron | SODF (4mg) | \$990 | 3.4¢* (2.1x) ^{EMIT} | 12.8¢ | 0.3¢ ^{TN} | 1.6¢ |
| ondansetron | SODF (8mg) | \$990 | 11.4¢* (5.4x) ^{EMIT} | 192.4¢ | 0.5¢ ^{TN} | 2.1¢ |
| paracetamol | tablet (100mg) | \$4 | | | | 1.2¢ |
| paracetamol | tablet (200mg) | \$4 | | | | 1.3¢ |
| paracetamol | tablet (300mg) | \$4 | | | | 1.4¢ |
| paracetamol | tablet (400mg) | \$4 | | | | 1.5¢ |
| paracetamol | tablet (500mg) | \$4 | 0.4¢* (0.3x) ^{BNF} | 0.5¢ | 0.3¢ ^{TN} | 1.6¢ |
| Antiallergics and medicines used in anaphylaxis | | | | | | |
| loratadine | tablet (10mg) | \$281 | 1.7¢* (1.2x) ^{EMIT} | | 2.9¢ ^P | 1.4¢ |
| prednisolone | tablet (5mg) | \$962 | 2.0¢* (1.2x) ^{EMIT} | 1.0¢ | 0.5¢ ^{TN} | 1.7¢ |
| prednisolone | tablet (25mg) | \$962 | 9.8¢* (2.5x) ^{EMIT} | 5.1¢ | 2.7¢ ^{TN} | 3.8¢ |
| Antidotes and other substances used in poisonings | | | | | | |
| penicillamine | SODF (250mg) | \$1,724 | 23.1¢* (0.5x) ^{BNF} | | 14.9¢ ^{TN} | 49.8¢ |
| succimer | SODF (100mg) | | | | | |

Table 2 continued.

| Medicine | Unit | API price/kg | UK unit price (ratio to estimated generic price) | SA unit price | India unit price | Estimated generic price |
|---------------------------------------|----------------------|--------------|--|---------------|--------------------|-------------------------|
| Anticonvulsants/antiepileptics | | | | | | |
| carbamazepine | tablet (100mg) | \$52 | 2.9¢* (1.6x) ^{EMIT} | 0.9¢ | 0.5¢ ^{TN} | 1.8¢ |
| carbamazepine | tablet (200mg) | \$52 | 5.1¢* (2.1x) ^{EMIT} | 1.8¢ | 1.1¢ ^{TN} | 2.4¢ |
| ethosuximide | tablet (250mg) | | 169.9¢ ^{BNF} | | | |
| phenobarbital | tablet (15mg) | \$36 | 10.4¢* (8.7x) ^{EMIT} | 0.4¢ | 0.1¢ ^{TN} | 1.2¢ |
| phenobarbital | tablet (30mg) | \$36 | 0.9¢* (0.7x) ^{EMIT} | 0.8¢ | 0.3¢ ^{TN} | 1.3¢ |
| phenobarbital | tablet (60mg) | \$36 | 4.3¢* (3.1x) ^{EMIT} | 0.4¢ | 0.6¢ ^{TN} | 1.4¢ |
| phenobarbital | tablet (100mg) | \$36 | | | | 1.6¢ |
| phenytoin | SODF (25mg) | \$17 | 69.9¢* (58.4x) ^{EMIT} | | 1.8¢ ^P | 1.2¢ |
| phenytoin | SODF (50mg) | \$17 | 70.5¢* (55.7x) ^{EMIT} | 2.2¢ | 0.2¢ ^{TN} | 1.3¢ |
| phenytoin | SODF (100mg) | \$17 | 62.0¢* (44.1x) ^{EMIT} | 3.3¢ | 0.3¢ ^{TN} | 1.4¢ |
| valproic acid (sodium valproate) | tablet (100mg) | \$26 | | 5.6¢ | 1.1¢ ^P | 1.5¢ |
| valproic acid (sodium valproate) | tablet (200mg) | \$26 | | | 0.9¢ ^{TN} | 1.8¢ |
| valproic acid (sodium valproate) | tablet (500mg) | \$26 | 10.2¢* (3.5x) ^{BNF} | | 5.1¢ ^P | 2.9¢ |
| Anthelmintics | | | | | | |
| diethylcarbamazine | tablet (50mg) | \$13 | | | 0.1¢ ^{TN} | 1.3¢ |
| diethylcarbamazine | tablet (100mg) | \$13 | | | 0.2¢ ^{TN} | 1.5¢ |
| ivermectin | tablet (3mg) | | | | 9.5¢ ^P | |
| levamisole | tablet (50mg) | \$28 | | | 2.1¢ ^P | 1.3¢ |
| levamisole | tablet (150mg) | \$28 | | | | 1.8¢ |
| oxamniquine | capsule (250mg) | | | | | |
| praziquantel | tablet (150mg) | \$148 | | | 57.6¢ ^P | 3.7¢ |
| praziquantel | tablet (600mg) | \$148 | | 288.9¢ | 61.9¢ ^P | 11.5¢ |
| triclabendazole | tablet (250mg) | \$44 | | | | 2.5¢ |
| Antibacterials | | | | | | |
| amoxicillin | SODF (250mg) | \$25 | 1.8¢* (0.8x) ^{EMIT} | 2.7¢ | 1.0¢ ^{TN} | 2.1¢ |
| amoxicillin | SODF (500mg) | \$25 | 3.2¢* (1.0x) ^{EMIT} | 4.1¢ | 2.0¢ ^{TN} | 3.1¢ |
| amoxicillin + clavulanic acid | tablet (500mg+125mg) | FDC | 12.9¢ ^{BNF} | | 31.5¢ ^P | |
| azithromycin | capsule (250mg) | \$193 | 58.8¢* (8.8x) ^{EMIT} | 23.8¢ | 1.7¢ ^P | 6.7¢ |
| azithromycin | capsule (500mg) | \$193 | 117.7¢* (9.6x) ^{EMIT} | 47.6¢ | 1.1¢ ^P | 12.3¢ |
| bedaquiline | tablet (100mg) | | 12930.9¢ ^{BNF} | | | |
| cefalexin | SODF (250mg) | \$49 | 3.4¢* (1.2x) ^{EMIT} | | 1.6¢ ^{TN} | 2.7¢ |
| cefixime | capsule (400mg) | \$162 | 491.4¢ (51.3x) ^{BNF} | | 22.4¢ ^P | 9.6¢ |
| chloramphenicol | capsule (250mg) | \$234 | 816.8¢* (103.7x) ^{BNF} | | 1.3¢ ^P | 7.9¢ |
| ciprofloxacin | tablet (250mg) | \$27 | 2.4¢* (1.1x) ^{EMIT} | 3.6¢ | 0.8¢ ^{TN} | 2.1¢ |
| clarithromycin | SODF (500mg) | \$249 | 14.8¢* (1.0x) ^{EMIT} | 35.9¢ | 3.3¢ ^{TN} | 15.5¢ |
| clindamycin | capsule (150mg) | \$213 | 7.0¢* (1.4x) ^{EMIT} | 24.4¢ | 22.5¢ ^P | 5.1¢ |

Table 2 continued.

| Medicine | Unit | API price/kg | UK unit price (ratio to estimated generic price) | SA unit price | India unit price | Estimated generic price |
|--|-------------------------------|--------------|--|---------------|--------------------|-------------------------|
| clofazimine | capsule (50mg) | \$239 | | | 1.6¢ ^P | 2.5¢ |
| clofazimine | capsule (100mg) | \$239 | | | 2.9¢ ^P | 3.9¢ |
| cloxacillin | capsule (500mg) | \$24 | | | 2.5¢ ^{TN} | 2.9¢ |
| cloxacillin | capsule (1000mg) | \$24 | | | 5.0¢ ^{TN} | 4.6¢ |
| cycloserine | SODF (250mg) | \$805 | 523.4¢* (21.8x) ^{BNF} | | 61.9¢ ^P | 24.0¢ |
| dapsone | tablet (25mg) | \$30 | 37.4¢* (30.5x) ^{EMIT} | | 0.05¢ ^P | 1.2¢ |
| dapsone | tablet (50mg) | \$30 | 74.8¢* (56.5x) ^{EMIT} | | 0.1¢ ^P | 1.3¢ |
| dapsone | tablet (100mg) | \$30 | 132.7¢ (87.2x) ^{EMIT} | | 0.5¢ ^P | 1.5¢ |
| delamanid | tablet (50mg) | | 3385.4¢ ^{BNF} | | | |
| doxycycline | SODF (50mg) | \$144 | 3.4¢* (1.6x) ^{EMIT} | | 2.3¢ ^P | 2.1¢ |
| doxycycline | SODF (100mg) | \$144 | 4.6¢* (1.5x) ^{EMIT} | 2.4¢ | 0.8¢ ^{TN} | 3.1¢ |
| erythromycin | SODF (250mg) | \$41 | 9.5¢* (3.2x) ^{BNF} | | 1.6¢ ^{TN} | 3.0¢ |
| ethambutol | tablet (100mg) | \$42 | 8.0¢* (4.3x) ^{EMIT} | | 0.3¢ ^P | 1.9¢ |
| ethambutol | tablet (200mg) | \$42 | 16.1¢* (6.2x) ^{EMIT} | 2.3¢ | 0.6¢ ^P | 2.6¢ |
| ethambutol | tablet (300mg) | \$42 | 24.1¢* (7.3x) ^{EMIT} | | 1.7¢ ^P | 3.3¢ |
| ethambutol | tablet (400mg) | \$42 | 23.1¢* (5.7x) ^{EMIT} | 4.6¢ | 1.0¢ ^P | 4.0¢ |
| ethambutol + isoniazid | tablet (400mg + 150mg) | FDC | | | | 4.3¢ |
| ethambutol + isoniazid + pyrazinamide + rifampicin | tablet (275/75/400/150mg FDC) | FDC | 85.6¢ (13.2x) ^{BNF} | 10.1¢ | 5.1¢ ^P | 6.5¢ |
| ethambutol + isoniazid + rifampicin | tablet (275/75/150mg FDC) | FDC | | | | 5.2¢ |
| ethionamide | tablet (125mg) | | | 4.7¢ | 4.5¢ ^P | |
| ethionamide | tablet (250mg) | | | 9.5¢ | 9.0¢ ^P | |
| isoniazid | tablet (50mg) | \$16 | 44.7¢* (35.8x) ^{BNF} | 0.9¢ | 0.04¢ ^P | 1.2¢ |
| isoniazid | tablet (100mg) | \$16 | 89.3¢* (65.3x) ^{BNF} | 1.7¢ | 0.1¢ ^P | 1.4¢ |
| isoniazid | tablet (200mg) | \$16 | 178.7¢* (111.1x) ^{BNF} | 3.4¢ | 0.2¢ ^P | 1.6¢ |
| isoniazid | tablet (300mg) | \$16 | 268.0¢* (145.0x) ^{BNF} | 5.1¢ | 0.7¢ ^P | 1.8¢ |
| isoniazid + pyrazinamide + rifampicin | tablet (75/400/150mg FDC) | FDC | | | 4.4¢ ^P | 4.5¢ |
| isoniazid + pyrazinamide + rifampicin | tablet (150/500/150mg FDC) | FDC | | | 5.6¢ ^P | 5.0¢ |
| isoniazid + rifampicin | tablet (60/60mg FDC) | FDC | | 4.5¢ | | 2.1¢ |
| isoniazid + rifampicin | tablet (75/150mg FDC) | FDC | | 4.1¢ | 2.3¢ ^P | 3.3¢ |
| isoniazid + rifampicin | tablet (150/150mg FDC) | FDC | | | | 3.5¢ |
| isoniazid + rifampicin | tablet (150/300mg FDC) | FDC | 58.5¢ (10.8x) ^{BNF} | 8.1¢ | 5.8¢ ^P | 5.4¢ |

Table 2 continued.

| | | | | | | |
|---------------------------------|----------------------|---------|------------------------------------|--------|--------------------|-------|
| levofloxacin | tablet (250mg) | \$142 | 15.9¢* (3.0x) ^{EMIT} | 14.7¢ | 1.3¢ ^{TN} | 5.3¢ |
| levofloxacin | tablet (500mg) | \$142 | 21.5¢* (2.3x) ^{EMIT} | 27.6¢ | 2.6¢ ^{TN} | 9.4¢ |
| levofloxacin | tablet (750mg) | \$142 | 47.6¢* (3.5x) ^{EMIT} | 44.1¢ | 4.0¢ ^{TN} | 13.5¢ |
| linezolid | tablet (400mg) | \$690 | | | 52.5¢ ^P | 32.5¢ |
| linezolid | tablet (600mg) | \$690 | 2975.2¢* (61.8x) ^{BNF} | 741.3¢ | 44.9¢ ^P | 48.1¢ |
| metronidazole | tablet (200mg) | \$12 | 2.4¢* (1.6x) ^{EMIT} | 0.7¢ | 0.4¢ ^{TN} | 1.5¢ |
| metronidazole | tablet (300mg) | \$12 | 3.6¢* (2.1x) ^{EMIT} | 1.1¢ | 0.6¢ ^{TN} | 1.7¢ |
| metronidazole | tablet (400mg) | \$12 | 2.5¢* (1.3x) ^{EMIT} | 1.2¢ | 0.8¢ ^{TN} | 1.9¢ |
| metronidazole | tablet (500mg) | \$12 | 6.0¢* (2.9x) ^{EMIT} | 1.8¢ | 1.0¢ ^{TN} | 2.1¢ |
| nitrofurantoin | tablet (100mg) | \$295 | 11.9¢ (2.6x) ^{EMIT} | 23.7¢ | 1.5¢ ^P | 4.5¢ |
| p-aminosalicylic acid | tablet (500mg) | | | | | |
| phenoxymethylpenicillin | tablet (250mg) | | 1.9¢ ^{EMIT} | | 1.3¢ ^{TN} | |
| pyrazinamide | tablet (400mg) | \$22 | | | | 2.4¢ |
| pyrazinamide | tablet (150mg) | \$22 | | | 2.7¢ ^P | 1.6¢ |
| rifabutin | capsule (150mg) | \$2,077 | 391.6¢ (10.8x) ^{BNF} | | 63.0¢ ^P | 36.3¢ |
| rifampicin | capsule (150mg) | \$112 | 8.9¢* (2.9x) ^{EMIT} | 7.8¢ | 2.1¢ ^{TN} | 3.1¢ |
| rifampicin | capsule (300mg) | \$112 | 14.8¢* (2.9x) ^{EMIT} | 15.6¢ | 4.1¢ ^{TN} | 5.1¢ |
| rifampicin | SODF (150mg) | \$112 | 8.9¢* (2.9x) ^{EMIT} | 7.8¢ | 2.1¢ ^{TN} | 3.1¢ |
| rifampicin | SODF (300mg) | \$112 | 14.8¢* (2.9x) ^{EMIT} | 15.6¢ | 4.1¢ ^{TN} | 5.1¢ |
| rifapentine | tablet (150mg) | | | | | |
| sulfamethoxazole + trimethoprim | tablet (100mg+20mg) | FDC | | | 0.3¢ ^P | 1.4¢ |
| sulfamethoxazole + trimethoprim | tablet (400mg+80mg) | FDC | 10.7¢* (5.0x) ^{BNF} | | 0.5¢ ^P | 2.2¢ |
| sulfamethoxazole + trimethoprim | tablet (800mg+150mg) | FDC | 30.4¢* (9.6x) ^{BNF} | | 1.4¢ ^P | 3.2¢ |
| trimethoprim | tablet (100mg) | \$30 | 1.2¢* (0.8x) ^{EMIT} | | | 1.5¢ |
| trimethoprim | tablet (200mg) | \$30 | 8.3¢* (4.3x) ^{EMIT} | | | 1.9¢ |
| Antifungal medicines | | | | | | |
| fluconazole | capsule (50mg) | \$142 | 3.9¢* (2.0x) ^{EMIT} | 4.7¢ | 0.9¢ ^P | 2.0¢ |
| flucytosine | capsule (250mg) | \$1,377 | | | | 40.1¢ |
| griseofulvin | tablet (125mg) | \$115 | 125.7¢* (44.6x) ^{BNF} | | 1.2¢ ^{TN} | 2.8¢ |
| griseofulvin | tablet (250mg) | \$115 | 251.3¢* (55.8x) ^{BNF} | | 2.4¢ ^{TN} | 4.5¢ |
| nystatin | tablet (20mg) | | | | | |
| nystatin | tablet (100mg) | | | | | |

Table 2 continued.

| Medicine | Unit | API price/kg | UK unit price (ratio to estimated generic price) | SA unit price | India unit price | Estimated generic price |
|---------------------------------------|----------------------------|--------------|--|---------------|---------------------|-------------------------|
| Antiviral medicines | | | | | | |
| abacavir (ABC) | tablet (300mg) | \$538 | 384.8¢ (17.0x) ^{BNF} | 20.0¢ | 70.5¢ ^P | 22.6¢ |
| aciclovir | tablet (200mg) | \$81 | 7.3¢* (2.4x) ^{BNF} | 3.8¢ | 5.1¢ ^P | 3.1¢ |
| atazanavir | SODF (100mg) | \$1,189 | | | 42.8¢ ^P | 16.5¢ |
| atazanavir | SODF (150mg) | \$1,189 | 657.3¢ (27.3x) ^{BNF} | 33.2¢ | 62.5¢ ^P | 24.1¢ |
| atazanavir | SODF (300mg) | \$1,189 | 1314.6¢ (27.9x) ^{BNF} | 66.4¢ | 105.0¢ ^P | 47.1¢ |
| daclatasvir | tablet (30mg) | \$852 | 37944.3¢ (8802.6x) ^{BNF} | | | 4.3¢ |
| daclatasvir | tablet (60mg) | \$852 | 37944.3¢ (5062.9x) ^{BNF} | | | 7.5¢ |
| darunavir | tablet (75mg) | \$1,588 | 121.0¢ (8.3x) ^{BNF} | | | 14.6¢ |
| darunavir | tablet (400mg) | \$1,588 | 645.2¢ (8.9x) ^{BNF} | | | 72.9¢ |
| darunavir | tablet (600mg) | \$1,588 | 967.9¢ (8.9x) ^{BNF} | 117.1¢ | 237.5¢ ^P | 108.8¢ |
| darunavir | tablet (800mg) | \$1,588 | 1290.5¢ (8.9x) ^{BNF} | | | 144.7¢ |
| dasabuvir | tablet (250mg) | | 2166.7¢ ^{BNF} | | | |
| efavirenz | capsule (50mg) | \$109 | 72.5¢* (41.0x) ^{BNF} | 4.5¢ | | 1.8¢ |
| efavirenz | capsule (100mg) | \$109 | 144.8¢* (60.0x) ^{BNF} | 9.0¢ | 19.5¢ ^P | 2.4¢ |
| efavirenz | capsule (200mg) | \$109 | 289.3¢* (78.2x) ^{BNF} | 5.2¢ | 39.0¢ ^P | 3.7¢ |
| efavirenz | tablet (200mg) | \$109 | 289.3¢ (78.2x) ^{BNF} | 5.2¢ | 39.0¢ ^P | 3.7¢ |
| efavirenz | tablet (600mg) | \$109 | 88.3¢* (10.0x) ^{EMIT} | 11.4¢ | 11.9¢ ^P | 8.8¢ |
| efavirenz + emtricitabine + tenofovir | tablet (600/200/300mg FDC) | FDC | 2309.1¢ (130.3x) ^{BNF} | 34.2¢ | 190.0¢ ^P | 17.7¢ |
| emtricitabine + tenofovir | tablet (200/300mg FDC) | FDC | 1541.5¢ (105.6x) ^{BNF} | 20.3¢ | 70.0¢ ^P | 14.6¢ |
| entecavir | tablet (0.5mg) | \$669,376 | 1574.1¢ (40.5x) ^{BNF} | | 10.8¢ ^{TN} | 38.8¢ |
| entecavir | tablet (1mg) | \$669,376 | 1574.1¢ (20.6x) ^{BNF} | | 5.4¢ ^{TN} | 76.5¢ |
| lamivudine (3TC) | tablet (150mg) | \$241 | 31.4¢* (5.9x) ^{EMIT} | 2.4¢ | 11.7¢ ^{TN} | 5.3¢ |
| lamivudine + nevirapine + stavudine | tablet (150/200/300mg FDC) | FDC | | | 30.5¢ ^P | 9.8¢ |
| lamivudine + nevirapine + zidovudine | tablet (30/50/60mg FDC) | FDC | | | | 4.7¢ |
| lamivudine + nevirapine + zidovudine | tablet (150/200/300mg FDC) | FDC | | | 31.9¢ ^P | 17.8¢ |
| lamivudine + zidovudine | tablet (30/60mg FDC) | FDC | | | | 3.7¢ |
| lamivudine + zidovudine | tablet (150/300mg FDC) | FDC | 53.2¢* (3.8x) ^{EMIT} | 13.4¢ | 29.7¢ ^P | 14.0¢ |
| ledipasvir + sofosbuvir | tablet (90/400mg FDC) | FDC | 60326.2¢ (593.4x) ^{BNF} | | | 101.7¢ |

Table 2 continued.

| Medicine | Unit | API price/kg | UK unit price (ratio to estimated generic price) | SA unit price | India unit price | Estimated generic price |
|---------------------------------------|---------------------------|--------------|--|---------------|----------------------|-------------------------|
| lopinavir + ritonavir (LPV/r) | tablet (100/25mg FDC) | FDC | 166.5¢ (13.7x) ^{BNF} | 8.2¢ | | 12.1¢ |
| lopinavir + ritonavir (LPV/r) | tablet (200/50mg FDC) | FDC | 309.2¢ (13.4x) ^{BNF} | 13.9¢ | 72.5¢ ^P | 23.2¢ |
| nevirapine (NVP) | tablet (200mg) | \$165 | 32.3¢* (6.5x) ^{EMIT} | 4.5¢ | 21.5¢ ^P | 5.0¢ |
| ombitasvir + paritaprevir + ritonavir | tablet (12.5/75/50mg FDC) | FDC | 24916.7¢ ^{BNF} | | | |
| oseltamivir | capsule (30mg) | \$1,860 | 100.2¢ (10.7x) ^{BNF} | | 37.5¢ ^P | 9.4¢ |
| oseltamivir | capsule (45mg) | \$1,860 | 200.3¢ (14.8x) ^{BNF} | | 48.8¢ ^P | 13.5¢ |
| oseltamivir | capsule (75mg) | \$1,860 | | | 62.9¢ ^{TN} | 21.8¢ |
| ribavirin | SODF (200mg) | \$122 | 95.5¢* (23.9x) ^{EMIT} | 26.9¢ | 13.8¢ ^{TN} | 4.0¢ |
| ribavirin | SODF (400mg) | \$122 | 266.5¢* (38.8x) ^{EMIT} | 53.7¢ | 27.6¢ ^{TN} | 6.9¢ |
| ribavirin | SODF (600mg) | \$122 | 286.4¢* (29.4x) ^{EMIT} | 80.6¢ | 41.4¢ ^{TN} | 9.7¢ |
| ritonavir | tablet (25mg) | \$1,665 | | | | 5.8¢ |
| ritonavir | tablet (100mg) | \$1,665 | 84.2¢ (4.2x) ^{BNF} | | | 19.9¢ |
| saquinavir (SQV) | SODF (200mg) | \$898 | | | | 24.4¢ |
| saquinavir (SQV) | SODF (500mg) | \$898 | 272.2¢ (4.6x) ^{BNF} | | 75.0¢ ^P | 59.3¢ |
| simeprevir | capsule (150mg) | | 34663.6¢ ^{BNF} | | | |
| sofosbuvir | tablet (400mg) | \$1,224 | 54140.3¢ (958.1x) ^{BNF} | | | 56.5¢ |
| stavudine (d4T) | capsule (15mg) | \$193 | | 2.4¢ | 2.9¢ ^P | 1.5¢ |
| stavudine (d4T) | capsule (20mg) | \$193 | 323.7¢ (205.7x) ^{BNF} | 2.7¢ | 3.2¢ ^P | 1.6¢ |
| stavudine (d4T) | capsule (30mg) | \$193 | 339.5¢ (188.9x) ^{BNF} | 2.6¢ | 5.7¢ ^P | 1.8¢ |
| tenofovir disoproxil fumarate (TDF) | tablet (300mg) | \$182 | 885.7¢ (119.0x) ^{BNF} | 9.1¢ | 18.0¢ ^{TN} | 7.4¢ |
| tenofovir disoproxil fumarate (TDF) | tablet (300mg) | \$182 | 885.7¢ (119.0x) ^{BNF} | 9.1¢ | 18.0¢ ^{TN} | 7.4¢ |
| valganciclovir | tablet (450mg) | \$2,391 | 2343.2¢ (19.1x) ^{BNF} | 1285.0¢ | 220.2¢ ^{TN} | 122.6¢ |
| zidovudine (ZDV or AZT) | capsule (100mg) | \$252 | 69.0¢* (17.1x) ^{EMIT} | 5.3¢ | 9.5¢ ^P | 4.0¢ |
| zidovudine (ZDV or AZT) | capsule (250mg) | \$252 | 104.0¢* (12.4x) ^{EMIT} | | 378.0¢ ^P | 8.4¢ |
| zidovudine (ZDV or AZT) | tablet (300mg) | \$252 | | 11.5¢ | 23.0¢ ^P | 9.8¢ |
| Antiprotozoal medicines | | | | | | |
| amodiaquine | tablet (200mg) | \$28 | | | 0.8¢ ^P | 2.0¢ |
| artemether + lumefantrine | tablet (20mg+120mg) | FDC | 121.9¢ (52.5x) ^{BNF} | 11.7¢ | 18.6¢ ^P | 2.3¢ |
| artesunate | tablet (50mg) | \$282 | | | 1.8¢ ^P | 2.7¢ |
| artesunate + amodiaquine | tablet (25mg+67.5mg) | FDC | | | | 2.2¢ |
| artesunate + amodiaquine | tablet (50mg+135mg) | FDC | | | | 3.3¢ |
| artesunate + amodiaquine | tablet (100mg+270mg) | FDC | | | | 5.5¢ |
| artesunate + mefloquine | tablet (25mg+55mg) | FDC | | | | 7.8¢ |
| artesunate + mefloquine | tablet (100mg+220mg) | FDC | | | | 27.9¢ |

Table 2 continued.

| Medicine | Unit | API price/kg | UK unit price (ratio to estimated generic price) | SA unit price | India unit price | Estimated generic price |
|---------------------------------|----------------------|--------------|--|---------------|--------------------|-------------------------|
| benznidazole | tablet (12.5mg) | | | | | |
| benznidazole | tablet (50mg) | | | | | |
| benznidazole | tablet (100mg) | | | | | |
| chloroquine | tablet (100mg) | \$20 | | | 0.9¢ ^P | 1.5¢ |
| chloroquine | tablet (150mg) | \$20 | | | 0.9¢ ^P | 1.7¢ |
| diloxanide | tablet (500mg) | \$22 | 405.2¢* (122.4x) ^{BNF} | | 0.4¢ ^P | 3.3¢ |
| doxycycline | SODF (100mg) | \$144 | 4.6¢* (1.5x) ^{EMIT} | 2.4¢ | 0.8¢ ^{TN} | 3.1¢ |
| mefloquine | tablet (250mg) | \$861 | 236.1¢ (8.5x) ^{BNF} | | 41.7¢ ^P | 27.9¢ |
| metronidazole | tablet (200mg) | \$12 | 2.4¢* (1.6x) ^{EMIT} | 0.7¢ | 0.4¢ ^{TN} | 1.5¢ |
| metronidazole | tablet (300mg) | \$12 | 3.6¢* (2.1x) ^{EMIT} | 1.1¢ | 0.6¢ ^{TN} | 1.7¢ |
| metronidazole | tablet (400mg) | \$12 | 2.5¢* (1.3x) ^{EMIT} | 1.2¢ | 0.8¢ ^{TN} | 1.9¢ |
| metronidazole | tablet (500mg) | \$12 | 6.0¢* (2.9x) ^{EMIT} | 1.8¢ | 1.0¢ ^{TN} | 2.1¢ |
| miltefosine | SODF (10mg) | | | | | |
| miltefosine | SODF (50mg) | | | | | |
| nifurtimox | tablet (30mg) | | | | | |
| nifurtimox | tablet (120mg) | | | | | |
| nifurtimox | tablet (250mg) | | | | | |
| pentamidine | tablet (200mg) | | | | | |
| pentamidine | tablet (300mg) | | | | | |
| primaquine | tablet (7.5mg) | \$381 | | | 1.9¢ ^P | 1.7¢ |
| primaquine | tablet (15mg) | \$381 | | | 3.2¢ ^P | 2.3¢ |
| proguanil | tablet (100mg) | \$264 | 15.9¢ (3.5x) ^{BNF} | | 3.7¢ ^P | 4.6¢ |
| pyrimethamine | tablet (25mg) | \$53 | 56.3¢ (43.6x) ^{BNF} | | | 1.3¢ |
| quinine | tablet (300mg) | \$111 | 5.5¢* (0.9x) ^{EMIT} | | 3.5¢ ^P | 5.9¢ |
| sulfadiazine | tablet (500mg) | \$292 | 185.3¢* (10.4x) ^{BNF} | | | 17.9¢ |
| sulfadoxine + pyrimethamine | tablet (500mg +25mg) | FDC | | | 3.0¢ ^P | 6.3¢ |
| sulfamethoxazole + trimethoprim | tablet (100mg+20mg) | FDC | | | 0.3¢ ^P | 1.4¢ |
| sulfamethoxazole + trimethoprim | tablet (400mg+80mg) | FDC | 10.7¢* (5.0x) ^{BNF} | | 0.5¢ ^P | 2.2¢ |
| Antimigraine medicines | | | | | | |
| acetylsalicylic acid | tablet (300mg) | \$5 | 1.0¢* (0.7x) ^{BNF} | | 0.5¢ ^{TN} | 1.5¢ |
| acetylsalicylic acid | tablet (400mg) | \$5 | | | | 1.6¢ |
| acetylsalicylic acid | tablet (500mg) | \$5 | | | 0.6¢ ^P | 1.7¢ |
| ibuprofen | tablet (200mg) | \$10 | 0.8¢* (0.5x) ^{EMIT} | 0.7¢ | 0.3¢ ^{TN} | 1.5¢ |
| ibuprofen | tablet (400mg) | \$10 | 2.4¢* (1.3x) ^{BNF} | 1.4¢ | 0.6¢ ^{TN} | 1.8¢ |
| paracetamol | tablet (300mg) | \$4 | | | | 1.4¢ |
| paracetamol | tablet (400mg) | \$4 | | | | 1.5¢ |
| paracetamol | tablet (500mg) | \$4 | 0.4¢* (0.3x) ^{BNF} | 0.5¢ | 0.3¢ ^{TN} | 1.6¢ |
| propranolol | tablet (20mg) | \$36 | 2.1¢* (1.7x) ^{BNF} | 15.4¢ | 1.0¢ ^P | 1.2¢ |
| propranolol | tablet (40mg) | \$36 | 1.4¢* (1.0x) ^{EMIT} | 7.7¢ | 1.1¢ ^P | 1.3¢ |

Table 2 continued.

| Medicine | Unit | API price/kg | UK unit price (ratio to estimated generic price) | SA unit price | India unit price | Estimated generic price |
|---|-----------------------|--------------|--|---------------|----------------------|-------------------------|
| Antineoplastics and immunosuppressives | | | | | | |
| all-trans retinoid acid (ATRA) | capsule (10mg) | | 312.0¢ ^{BNF} | | | |
| allopurinol | tablet (100mg) | \$34 | 0.9¢* (0.6x) ^{EMIT} | 4.6¢ | 0.8¢ ^{TN} | 1.6¢ |
| allopurinol | tablet (300mg) | \$34 | 1.6¢* (0.6x) ^{EMIT} | 3.3¢ | 2.4¢ ^{TN} | 2.4¢ |
| anastrozole | tablet (1mg) | \$48,669 | 3.5¢* (0.5x) ^{EMIT} | 12.2¢ | | 6.6¢ |
| azathioprine | tablet (50mg) | \$390 | 5.3¢* (1.6x) ^{BNF} | 6.8¢ | 1.9¢ ^{TN} | 3.4¢ |
| bicalutamide | tablet (50mg) | \$1,066 | 7.3¢* (1.0x) ^{EMIT} | 21.5¢ | 18.6¢ ^{TN} | 7.2¢ |
| calcium folinate | tablet (15mg) | | 233.9¢ ^{EMIT} | 127.8¢ | 57.0¢ ^P | |
| capecitabine | tablet (150mg) | \$393 | 16.7¢* (2.1x) ^{EMIT} | 41.4¢ | 108.0¢ ^P | 7.9¢ |
| capecitabine | tablet (500mg) | \$393 | 32.1¢* (1.4x) ^{EMIT} | 139.1¢ | 23.7¢ ^{TN} | 23.5¢ |
| chlorambucil | tablet (2mg) | | 222.9¢ ^{BNF} | 110.7¢ | 71.2¢ ^P | |
| ciclosporin | capsule (25mg) | \$1,354 | 56.6¢* (11.4x) ^{BNF} | 28.3¢ | 31.5¢ ^P | 5.0¢ |
| cyclophosphamide | tablet (25mg) | \$1,563 | 90.4¢* (16.3x) ^{BNF} | 14.1¢ | 1.3¢ ^{TN} | 5.5¢ |
| etoposide | capsule (100mg) | \$8,463 | 1134.0¢ (11.7x) ^{BNF} | | 150.0¢ ^{TN} | 96.5¢ |
| fludarabine | tablet (10mg) | | 2621.5¢ ^{BNF} | 2157.8¢ | 2486.3¢ ^P | |
| hydroxycarbamide | SODF (200mg) | | 433.3¢ ^{BNF} | | | |
| hydroxycarbamide | SODF (250mg) | | 541.7¢ ^{BNF} | | 5.3¢ ^P | |
| hydroxycarbamide | SODF (300mg) | | 650.0¢ ^{BNF} | | | |
| hydroxycarbamide | SODF (400mg) | | 866.7¢ ^{BNF} | | | |
| hydroxycarbamide | SODF (500mg) | | 11.4¢ ^{EMIT} | | 10.6¢ ^P | |
| hydroxycarbamide | SODF (1000mg) | | 22.9¢ ^{EMIT} | | 21.2¢ ^P | |
| imatinib | tablet (100mg) | \$2,284 | 2108.9¢ (78.4x) ^{BNF} | 65.6¢ | 135.0¢ ^P | 26.9¢ |
| imatinib | tablet (400mg) | \$2,284 | 8435.6¢ (80.9x) ^{BNF} | 262.4¢ | 21.7¢ ^{TN} | 104.3¢ |
| mercaptopurine | tablet (50mg) | \$292 | 255.6¢* (91.3x) ^{BNF} | 297.5¢ | 2.8¢ ^{TN} | 2.8¢ |
| mesna | tablet (400mg) | \$666 | 1745.9¢* (55.7x) ^{BNF} | | | 31.4¢ |
| mesna | tablet (600mg) | \$666 | 2477.8¢* (53.3x) ^{BNF} | | | 46.5¢ |
| methotrexate | tablet (2.5mg) | \$77,181 | 6.0¢* (0.3x) ^{EMIT} | 5.3¢ | 0.9¢ ^{TN} | 23.9¢ |
| prednisolone | tablet (5mg) | \$962 | 2.0¢* (1.2x) ^{EMIT} | 1.0¢ | 0.5¢ ^{TN} | 1.7¢ |
| prednisolone | tablet (25mg) | \$962 | 9.8¢* (2.5x) ^{EMIT} | 5.1¢ | 2.7¢ ^{TN} | 3.8¢ |
| procarbazine | capsule (50mg) | | 883.9¢ ^{BNF} | | 50.0¢ ^P | |
| tamoxifen | tablet (10mg) | \$271 | 21.0¢* (13.1x) ^{EMIT} | 1.9¢ | 0.5¢ ^{TN} | 1.6¢ |
| tamoxifen | tablet (20mg) | \$271 | 7.0¢* (3.4x) ^{EMIT} | 3.9¢ | 1.1¢ ^{TN} | 2.1¢ |
| tioguanine | SODF (40mg) | | 569.8¢ ^{BNF} | | 45.0¢ ^P | |
| Antiparkinsonism medicines | | | | | | |
| biperiden | tablet (2mg) | \$2,677 | | | | 1.8¢ |
| levodopa + carbidopa | tablet (100/10mg FDC) | FDC | 9.5¢* (2.7x) ^{BNF} | | 1.5¢ ^P | 3.5¢ |
| levodopa + carbidopa | tablet (100/25mg FDC) | FDC | 16.7¢* (3.9x) ^{BNF} | 5.3¢ | 3.1¢ ^P | 4.3¢ |
| levodopa + carbidopa | tablet (250/25mg FDC) | FDC | 23.8¢* (3.4x) ^{BNF} | 9.0¢ | 3.6¢ ^P | 7.1¢ |

Table 2 continued.

| Medicine | Unit | API price/kg | UK unit price (ratio to estimated generic price) | SA unit price | India unit price | Estimated generic price |
|--------------------------------------|----------------------------|--------------|--|---------------|---------------------|-------------------------|
| Medicines affecting the blood | | | | | | |
| ferrous salt | tablet (60mg iron) | | 1.7¢ ^{EMIT} | | | |
| ferrous salt + folic acid | tablet (60mg iron + 0.4mg) | FDC | | | | 1.2¢ |
| folic acid | tablet (400mcg) | \$462 | 0.9¢* (0.7x) ^{BNF} | | | 1.1¢ |
| folic acid | tablet (1mg) | \$462 | | | 1.1¢ ^P | 1.2¢ |
| folic acid | tablet (5mg) | \$462 | 1.3¢* (0.9x) ^{EMIT} | 0.9¢ | 0.2¢ ^{TN} | 1.4¢ |
| hydroxycarbamide | SODF (200mg) | | 433.3¢ ^{BNF} | | | |
| hydroxycarbamide | SODF (500mg) | | 11.4¢ ^{EMIT} | | 10.6¢ ^P | |
| hydroxycarbamide | SODF (1000mg) | | 22.9¢ ^{EMIT} | | 21.2¢ ^P | |
| phytomenadione | tablet (10mg) | | | | | |
| warfarin | tablet (0.5mg) | \$519 | 0.5¢* (0.5x) ^{EMIT} | 1.0¢ | 0.8¢ ^P | 1.2¢ |
| warfarin | tablet (1mg) | \$519 | 1.1¢* (0.9x) ^{EMIT} | 2.1¢ | 1.5¢ ^P | 1.2¢ |
| warfarin | tablet (2mg) | \$519 | 2.1¢* (1.7x) ^{EMIT} | 4.2¢ | 1.8¢ ^P | 1.3¢ |
| warfarin | tablet (5mg) | \$519 | 1.2¢* (0.8x) ^{EMIT} | 2.4¢ | 3.0¢ ^P | 1.4¢ |
| Cardiovascular medicines | | | | | | |
| acetylsalicylic acid | tablet (100mg) | \$5 | | | 0.2¢ ^P | 1.2¢ |
| amiodarone | tablet (100mg) | \$128 | 1.8¢* (0.7x) ^{EMIT} | 3.0¢ | 3.8¢ ^{TN} | 2.7¢ |
| amiodarone | tablet (200mg) | \$128 | 3.9¢* (0.9x) ^{EMIT} | 5.9¢ | 7.6¢ ^{TN} | 4.3¢ |
| amiodarone | tablet (400mg) | \$128 | 7.7¢* (1.0x) ^{EMIT} | 11.8¢ | 11.4¢ ^{TN} | 7.5¢ |
| amlodipine | tablet (5mg) | \$143 | 0.7¢* (0.6x) ^{EMIT} | 0.7¢ | 0.1¢ ^{TN} | 1.2¢ |
| bisoprolol | tablet (1.25mg) | \$435 | 1.5¢* (1.3x) ^{EMIT} | | 1.3¢ ^P | 1.2¢ |
| bisoprolol | tablet (5mg) | \$435 | 1.2¢* (0.8x) ^{EMIT} | | 3.1¢ ^P | 1.4¢ |
| clopidogrel | tablet (75mg) | \$176 | 6.9¢* (2.0x) ^{BNF} | 7.6¢ | 0.8¢ ^{TN} | 3.4¢ |
| clopidogrel | tablet (300mg) | \$176 | 617.7¢* (60.3x) ^{BNF} | | 3.2¢ ^{TN} | 10.3¢ |
| digoxin | tablet (62.5mcg) | \$7,081 | 2.1¢* (1.8x) ^{BNF} | | | 1.2¢ |
| digoxin | tablet (250mcg) | \$7,081 | 1.3¢* (1.0x) ^{EMIT} | 2.8¢ | 0.4¢ ^{TN} | 1.3¢ |
| digoxin | tablet (62.5mcg) | \$7,081 | 2.1¢* (1.8x) ^{BNF} | | | 1.2¢ |
| digoxin | tablet (250mcg) | \$7,081 | 1.3¢* (1.0x) ^{EMIT} | 2.8¢ | 0.4¢ ^{TN} | 1.3¢ |
| enalapril | tablet (2.5mg) | \$152 | 2.3¢* (2.0x) ^{EMIT} | 0.4¢ | 0.2¢ ^{TN} | 1.2¢ |
| enalapril | tablet (5mg) | \$152 | 1.3¢* (1.0x) ^{EMIT} | 0.8¢ | 0.4¢ ^{TN} | 1.2¢ |
| enalapril | tablet (2.5mg) | \$152 | 2.3¢* (2.0x) ^{EMIT} | 1.6¢ | 0.2¢ ^{TN} | 1.2¢ |
| enalapril | tablet (5mg) | \$152 | 1.3¢* (1.0x) ^{EMIT} | 0.8¢ | 0.4¢ ^{TN} | 1.2¢ |
| furosemide | tablet (40mg) | \$37 | 0.6¢* (0.5x) ^{EMIT} | 0.5¢ | 4.0¢ ^P | 1.3¢ |
| glyceryl trinitrate | tablet (500mcg) | \$39 | 1.8¢* (1.6x) ^{EMIT} | | 1.4¢ ^P | 1.1¢ |
| hydralazine | tablet (25mg) | \$316 | 5.2¢* (2.3x) ^{BNF} | 2.9¢ | | 2.2¢ |

Table 2 continued.

| Medicine | Unit | API price/kg | UK unit price (ratio to estimated generic price) | SA unit price | India unit price | Estimated generic price |
|-----------------------------------|-------------------------|--------------|--|---------------|--------------------|-------------------------|
| hydralazine | tablet (50mg) | \$316 | 30.1¢* (9.0x) ^{BNF} | 4.7¢ | | 3.4¢ |
| hydrochlorothiazide | SODF (12.5mg) | \$25 | | 0.7¢ | 0.9¢ ^P | 1.2¢ |
| hydrochlorothiazide | SODF (25mg) | \$25 | | 0.7¢ | 1.4¢ ^P | 1.2¢ |
| hydrochlorothiazide | SODF (25mg) | \$25 | | 0.7¢ | 1.4¢ ^P | 1.2¢ |
| isosorbide dinitrate | sublingual tablet (5mg) | | | | 0.6¢ ^P | |
| methyl dopa | tablet (250mg) | | 5.3¢ ^{EMIT} | 4.0¢ | 2.7¢ ^{TN} | |
| simvastatin | tablet (5mg) | \$246 | 0.4¢ (0.3x) ^{EMIT} | 0.7¢ | 1.5¢ ^P | 1.3¢ |
| simvastatin | tablet (10mg) | \$246 | 0.7¢* (0.5x) ^{EMIT} | 1.4¢ | 3.0¢ ^P | 1.4¢ |
| simvastatin | tablet (20mg) | \$246 | 1.1¢* (0.7x) ^{EMIT} | 2.0¢ | 4.5¢ ^P | 1.7¢ |
| simvastatin | tablet (40mg) | \$246 | 1.7¢* (0.7x) ^{EMIT} | 4.0¢ | 11.3¢ ^P | 2.3¢ |
| spironolactone | tablet (25mg) | | 2.1¢ ^{EMIT} | 2.0¢ | 2.8¢ ^P | |
| verapamil | tablet (40mg) | \$73 | 1.3¢* (0.8x) ^{EMIT} | 2.6¢ | 0.8¢ ^{TN} | 1.5¢ |
| verapamil | tablet (80mg) | \$73 | 2.6¢* (1.4x) ^{EMIT} | 1.3¢ | 1.7¢ ^{TN} | 1.9¢ |
| Diuretics | | | | | | |
| amiloride | tablet (5mg) | \$349 | 2.2¢* (1.6x) ^{EMIT} | | | 1.4¢ |
| furosemide | tablet (10mg) | \$37 | 0.3¢* (0.2x) ^{EMIT} | | | 1.2¢ |
| furosemide | tablet (20mg) | \$37 | 0.6¢* (0.5x) ^{EMIT} | 0.3¢ | 2.0¢ ^P | 1.2¢ |
| furosemide | tablet (40mg) | \$37 | 0.6¢* (0.5x) ^{EMIT} | 0.5¢ | 4.0¢ ^P | 1.3¢ |
| hydrochlorothiazide | SODF (25mg) | \$25 | | 0.7¢ | 1.4¢ ^P | 1.2¢ |
| spironolactone | tablet (25mg) | | 2.1¢ ^{EMIT} | 2.0¢ | 2.8¢ ^P | |
| Gastrointestinal medicines | | | | | | |
| dexamethasone | SODF (0.5mg) | \$1,482 | 177.8¢* (146.9x) ^{EMIT} | | 0.2¢ ^{TN} | 1.2¢ |
| dexamethasone | SODF (0.75mg) | \$1,482 | 266.7¢* (213.0x) ^{EMIT} | | 0.3¢ ^{TN} | 1.3¢ |
| dexamethasone | SODF (1.5mg) | \$1,482 | 533.5¢* (387.2x) ^{EMIT} | | 0.5¢ ^{TN} | 1.4¢ |
| dexamethasone | SODF (4mg) | \$1,482 | 37.0¢* (20.6x) ^{BNF} | | 1.4¢ ^{TN} | 1.8¢ |
| metoclopramide | tablet (10mg) | \$77 | 1.3¢* (1.0x) ^{EMIT} | 0.4¢ | 0.4¢ ^P | 1.2¢ |
| omeprazole | SODF (10mg) | \$14 | 2.9¢* (2.5x) ^{EMIT} | 9.9¢ | 2.1¢ ^P | 1.1¢ |
| omeprazole | SODF (20mg) | \$14 | 2.0¢* (1.7x) ^{EMIT} | 19.9¢ | 0.4¢ ^{TN} | 1.2¢ |
| omeprazole | SODF (40mg) | \$14 | 3.3¢* (2.7x) ^{EMIT} | 39.8¢ | 0.8¢ ^{TN} | 1.2¢ |
| ondansetron | SODF (4mg) | \$990 | 3.4¢* (2.1x) ^{EMIT} | 12.8¢ | 0.3¢ ^{TN} | 1.6¢ |
| ondansetron | SODF (8mg) | \$990 | 11.4¢* (5.4x) ^{EMIT} | 192.4¢ | 0.5¢ ^{TN} | 2.1¢ |
| ondansetron | SODF (24mg) | \$990 | 34.3¢* (8.3x) ^{EMIT} | 577.1¢ | 0.8¢ ^{TN} | 4.2¢ |
| ranitidine | tablet (150mg) | \$19 | 1.1¢* (0.7x) ^{EMIT} | 1.4¢ | 0.5¢ ^P | 1.6¢ |
| senna | tablet (7.5mg) | | 1.9¢ ^{BNF} | | 5.9¢ ^P | |
| sulfasalazine | tablet (500mg) | \$39 | 4.5¢* (1.2x) ^{EMIT} | 17.7¢ | 3.5¢ ^{TN} | 3.6¢ |
| zinc sulfate | SODF (20mg) | \$2 | | 0.7¢ | 4.5¢ ^P | 1.1¢ |

Table 2 continued.

| Medicine | Unit | API price/kg | UK unit price (ratio to estimated generic price) | SA unit price | India unit price | Estimated generic price |
|---|---|--------------|--|---------------|---------------------|-------------------------|
| Hormones, other endocrine medicines and contraceptives | | | | | | |
| clomifene | tablet (50mg) | \$140 | 42.4¢* (21.8x) ^{EMIT} | 33.6¢ | 4.4¢ ^P | 1.9¢ |
| ethinylestradiol + levonorgestrel | tablet (30mcg + 150mcg) | | 3.7¢ ^{BNF} | 0.5¢ | 1.5¢ ^P | |
| ethinylestradiol + norethisterone | tablet (30mcg + 1mg) | | | | | |
| fludrocortisone | tablet (100mcg) | | | | 17.3¢ ^P | |
| gliclazide | SODF (30mg) | \$137 | | | 2.3¢ ^P | 1.6¢ |
| gliclazide | SODF (60mg) | \$137 | | | 3.2¢ ^P | 2.1¢ |
| gliclazide | SODF (80mg) | \$137 | 1.5¢* (0.6x) ^{EMIT} | | 1.1¢ ^{TN} | 2.4¢ |
| hydrocortisone | tablet (5mg) | \$691 | 103.6¢ (68.2x) ^{EMIT} | 3.9¢ | 2.9¢ ^{TN} | 1.5¢ |
| hydrocortisone | tablet (10mg) | \$691 | 207.2¢ (108.4x) ^{EMIT} | 7.8¢ | 5.8¢ ^{TN} | 1.9¢ |
| hydrocortisone | tablet (20mg) | \$691 | 267.9¢ (99.4x) ^{EMIT} | 15.6¢ | 11.6¢ ^{TN} | 2.7¢ |
| levonorgestrel | tablet (30mcg) | | 3.4¢ ^{BNF} | 0.6¢ | | |
| levonorgestrel | tablet (750mcg) | | 949.0¢ ^{BNF} | | 25.5¢ ^P | |
| levonorgestrel | tablet (1.5mg) | | 361.4¢ ^{EMIT} | 140.8¢ | 79.5¢ ^P | |
| levothyroxine | tablet (25mcg) | | 7.7¢ ^{EMIT} | | 0.5¢ ^P | |
| levothyroxine | tablet (50mcg) | | 2.2¢ ^{BNF} | | 0.9¢ ^P | |
| levothyroxine | tablet (100mcg) | | 2.3¢ ^{BNF} | | 1.6¢ ^P | |
| medroxyprogesterone acetate | tablet (5mg) | | 15.2¢ ^{BNF} | 7.1¢ | 3.3¢ ^P | |
| metformin | tablet (500mg) | \$4 | 0.8¢* (0.4x) ^{EMIT} | 1.1¢ | 0.3¢ ^{TN} | 1.8¢ |
| metformin | tablet (500mg) | \$4 | 0.8¢* (0.4x) ^{EMIT} | 1.1¢ | 0.3¢ ^{TN} | 1.8¢ |
| potassium iodide | tablet (60mg) | \$20 | | | | 1.3¢ |
| potassium iodide | tablet (60mg) | \$20 | | | | 1.3¢ |
| propylthiouracil | tablet (50mg) | | 136.2¢ ^{BNF} | | 5.1¢ ^P | |
| propylthiouracil | tablet (50mg) | | 136.2¢ ^{BNF} | | 5.1¢ ^P | |
| Muscle relaxants (peripherally-acting) and cholinesterase inhibitors | | | | | | |
| neostigmine | tablet (15mg) | | 92.5¢ ^{BNF} | | 5.5¢ ^P | |
| pyridostigmine | tablet (60mg) | | 29.6¢ ^{BNF} | 58.3¢ | 9.0¢ ^P | |
| Ophthalmological preparations | | | | | | |
| acetazolamide | tablet (250mg) | \$58 | 70.5¢* (24.3x) ^{EMIT} | 3.1¢ | 1.3¢ ^{TN} | 2.9¢ |
| Oxytocics and antioxytocics | | | | | | |
| mifepristone - misoprostol | tablet (200mg) & tablet (200mcg) | combination | 264.7¢ ^{EMIT} | | 748.5¢ ^P | |
| misoprostol | tablet (200mcg) | | 21.7¢ ^{BNF} | 29.0¢ | 2.1¢ ^{TN} | |
| nifedipine | immediate- release capsule (10mg) | \$70 | 6.2¢* (5.1x) ^{BNF} | 4.2¢ | 1.1¢ ^{TN} | 1.2¢ |
| Medicines for mental and behavioural disorder | | | | | | |
| amitriptyline | tablet (25mg) | \$49 | 0.9¢* (0.7x) ^{EMIT} | 0.7¢ | 0.3¢ ^{TN} | 1.3¢ |
| amitriptyline | tablet (75mg) | \$49 | 2.6¢* (1.6x) ^{EMIT} | 2.2¢ | 0.8¢ ^{TN} | 1.6¢ |
| carbamazepine | tablet (100mg) | \$52 | 2.9¢* (1.6x) ^{EMIT} | 0.9¢ | 0.5¢ ^{TN} | 1.8¢ |
| carbamazepine | tablet (200mg) | \$52 | 5.1¢* (2.1x) ^{EMIT} | 1.8¢ | 1.1¢ ^{TN} | 2.4¢ |

Table 2 continued.

| Medicine | Unit | API price/kg | UK unit price (ratio to estimated generic price) | SA unit price | India unit price | Estimated generic price |
|----------------------------------|----------------|--------------|--|---------------|--------------------|-------------------------|
| chlorpromazine | tablet (100mg) | \$77 | 5.8¢* (2.7x) ^{EMIT} | 4.7¢ | 0.8¢ ^{TN} | 2.2¢ |
| chlorpromazine | tablet (10mg) | \$77 | | | 2.3¢ ^P | 1.2¢ |
| chlorpromazine | tablet (25mg) | \$77 | 8.4¢* (6.0x) ^{BNF} | 1.5¢ | 0.4¢ ^{TN} | 1.4¢ |
| chlorpromazine | tablet (50mg) | \$77 | 2.9¢* (1.8x) ^{EMIT} | 3.2¢ | 0.7¢ ^{TN} | 1.6¢ |
| chlorpromazine | tablet (100mg) | \$77 | 5.8¢* (2.7x) ^{EMIT} | 4.7¢ | 0.8¢ ^{TN} | 2.2¢ |
| clomipramine | capsule (10mg) | \$329 | 5.4¢* (3.6x) ^{EMIT} | | 2.3¢ ^P | 1.5¢ |
| clomipramine | capsule (25mg) | \$329 | 5.7¢* (2.7x) ^{EMIT} | | 4.4¢ ^P | 2.1¢ |
| clozapine | SODF (25mg) | \$189 | 9.4¢* (5.6x) ^{EMIT} | 2.9¢ | 0.9¢ ^{TN} | 1.7¢ |
| clozapine | SODF (50mg) | \$189 | 18.7¢* (8.4x) ^{EMIT} | 5.9¢ | 1.9¢ ^{TN} | 2.2¢ |
| clozapine | SODF (100mg) | \$189 | 37.8¢* (11.4x) ^{EMIT} | 9.4¢ | 3.8¢ ^{TN} | 3.3¢ |
| clozapine | SODF (200mg) | \$189 | 75.7¢* (13.7x) ^{EMIT} | 18.9¢ | 7.5¢ ^{TN} | 5.5¢ |
| diazepam | tablet (2mg) | \$131 | 0.8¢* (0.7x) ^{EMIT} | | 1.1¢ ^P | 1.2¢ |
| diazepam | tablet (5mg) | \$131 | 0.8¢* (0.7x) ^{EMIT} | 0.7¢ | 0.2¢ ^{TN} | 1.2¢ |
| fluoxetine | SODF (20mg) | \$71 | 1.2¢* (0.9x) ^{EMIT} | 1.0¢ | 0.4¢ ^{TN} | 1.3¢ |
| fluoxetine | SODF (20mg) | \$71 | 1.2¢* (0.9x) ^{EMIT} | 1.0¢ | 0.4¢ ^{TN} | 1.3¢ |
| haloperidol | SODF (0.5mg) | \$331 | 5.1¢* (4.5x) ^{BNF} | 7.6¢ | 1.2¢ ^P | 1.1¢ |
| haloperidol | SODF (2mg) | \$331 | 20.5¢* (17.0x) ^{BNF} | 30.5¢ | 2.9¢ ^P | 1.2¢ |
| haloperidol | SODF (5mg) | \$331 | 4.6¢* (3.5x) ^{EMIT} | 1.5¢ | 0.3¢ ^{TN} | 1.3¢ |
| lithium carbonate | SODF (300mg) | \$15 | | | 0.6¢ ^{TN} | 1.8¢ |
| risperidone | SODF (1mg) | \$1,466 | 2.2¢* (1.7x) ^{EMIT} | 1.1¢ | 0.1¢ ^{TN} | 1.3¢ |
| risperidone | SODF (2mg) | \$1,466 | 1.4¢* (0.9x) ^{EMIT} | 1.2¢ | 0.2¢ ^{TN} | 1.5¢ |
| risperidone | SODF (3mg) | \$1,466 | 3.6¢* (2.2x) ^{EMIT} | 2.0¢ | 0.3¢ ^{TN} | 1.6¢ |
| risperidone | SODF (4mg) | \$1,466 | 2.8¢* (1.6x) ^{EMIT} | 2.5¢ | 0.4¢ ^{TN} | 1.8¢ |
| risperidone | SODF (6mg) | \$1,466 | 5.0¢* (2.3x) ^{EMIT} | 4.0¢ | 0.7¢ ^{TN} | 2.1¢ |
| risperidone | SODF (0.25mg) | \$1,466 | 1.3¢ (1.1x) ^{EMIT} | 3.0¢ | | 1.2¢ |
| risperidone | SODF (0.5mg) | \$1,466 | 2.5¢* (2.1x) ^{EMIT} | 1.5¢ | 0.5¢ ^P | 1.2¢ |
| valproic acid (sodium valproate) | tablet (200mg) | \$26 | | | 0.9¢ ^{TN} | 1.8¢ |
| valproic acid (sodium valproate) | tablet (500mg) | \$26 | 10.2¢* (3.5x) ^{BNF} | | 5.1¢ ^P | 2.9¢ |

Table 2 continued.

| Medicine | Unit | API price/kg | UK unit price (ratio to estimated generic price) | SA unit price | India unit price | Estimated generic price |
|---|----------------|--------------|--|---------------|---------------------|-------------------------|
| Medicines for diseases of the joints | | | | | | |
| acetylsalicylic acid | tablet (100mg) | \$5 | | | 0.2¢ ^P | 1.2¢ |
| acetylsalicylic acid | tablet (150mg) | \$5 | 0.5¢* (0.4x) ^{BNF} | | 0.3¢ ^{TN} | 1.3¢ |
| acetylsalicylic acid | tablet (200mg) | \$5 | | | | 1.4¢ |
| acetylsalicylic acid | tablet (300mg) | \$5 | 1.0¢* (0.7x) ^{BNF} | | 0.5¢ ^{TN} | 1.5¢ |
| acetylsalicylic acid | tablet (400mg) | \$5 | | | | 1.6¢ |
| acetylsalicylic acid | tablet (500mg) | \$5 | | | 0.6¢ ^P | 1.7¢ |
| allopurinol | tablet (100mg) | \$34 | 0.9¢* (0.6x) ^{EMIT} | 4.6¢ | 0.8¢ ^{TN} | 1.6¢ |
| azathioprine | tablet (50mg) | \$390 | 5.3¢* (1.6x) ^{BNF} | 6.8¢ | 1.9¢ ^{TN} | 3.4¢ |
| chloroquine | tablet (100mg) | \$20 | | | 0.9¢ ^P | 1.5¢ |
| chloroquine | tablet (150mg) | \$20 | | | 0.9¢ ^P | 1.7¢ |
| hydroxychloroquine | SODF (200mg) | \$145 | 6.1¢* (1.3x) ^{EMIT} | | 2.8¢ ^{TN} | 4.5¢ |
| methotrexate | tablet (2.5mg) | \$77,181 | 6.0¢* (0.3x) ^{EMIT} | 5.3¢ | 0.9¢ ^{TN} | 23.9¢ |
| penicillamine | SODF (250mg) | \$1,724 | 23.1¢* (0.5x) ^{BNF} | | 14.9¢ ^{TN} | 49.8¢ |
| sulfasalazine | tablet (500mg) | \$39 | 4.5¢* (1.2x) ^{EMIT} | 17.7¢ | 3.5¢ ^{TN} | 3.6¢ |

Blank - no data.

^{EMIT} - lowest price was from the eMIT database.

^{BNF} - lowest price was from the BNF.

API - active pharmaceutical ingredient. SA - South Africa. FDC - fixed-dose combination. SODF - solid oral dosage form.

* available from multiple suppliers in the UK.

^P price from database of Maximum Retail Sales Prices.

^{TN} price from Tamil Nadu public tender database.

Additional references for Methods

2015 WHO Model List of Essential Medicines.[1]

For pharmaceutical manufacture, India and China are similar in cost of labour, infrastructure, and tax.[2,3]

WHO prequalification programme currently lists 336 products manufactured in India, but only 23 products manufactured in China (WHO database searched for "Manufacturing Site = India" and "Manufacturing Site = China" on 18 Aug 2017).[4]

Indian customs regulation requiring publication of export logs: Indian Central Government Notification No. 128/2004-Customs (N.T).[5,6]

Typical costs of excipients used in tablets and typical proportion of the FPP.[7,8]

Indian drug production cost 'norms'.[9]

Analysis of production costs by Chaudhuri et al (further discussed below).[10]

Analysis of production costs by McKinsey.[11]

In 2016-2017 tax rates for a domestic company in India ranged from 18.5% to 34.6%.[12,13]

Many firms operate out of duty-free 'special economic zones'.[14,15]

The average profit margin for the pharmaceutical industry in India was 8.8% in 1995 and 15.4% in 2005.[16]

In the United States, the average operating margin is 12%.[17]

For South Africa, prices were extracted from the Master Procurement Catalogue, published by the National Department of Health.[18]

For Tamil Nadu, India, prices were extracted from a list of a tendered medicines published by Tamil Nadu Medical Services Corporation Limited.[19,20] For medicines whose prices were not available in this Tamil Nadu database, prices were taken from an online database of Indian Maximum Retail Sales Prices.[21]

For the United Kingdom, prices were extracted from the British National Formulary and the drugs and pharmaceutical electronic market information tool (eMit).[22,23]

Included and excluded formulations, by terms used in WHO MLEM.

| |
|--|
| Included: |
| Tablet, capsule, immediate release capsule, solid oral dosage form, tablet (chewable), tablet (crushable), tablet (enteric-coated), tablet (heat stable), tablet (immediate release), tablet (scored), tablet (slow release), tablet (sublingual), tablet (sugar-coated) |
| Excluded: |
| Ampoule, aqueous solution, aqueous suspension, chewing gum, concentrate for injection, concentrate for oral liquid, cream, dental cartridges, depot injection, detergent-based suspension, eye drops, eye ointment, gel or rectal solution, granules, "any appropriate topical formulation", implantable contraceptive, infusion, inhalation, inhalation (aerosol), inhalation (medical gas), injection, injection for intravenous administration, injection for IV administration, injection for spinal anaesthesia, injection in oil, injection: ampoule or pre-filled syringes, intramuscular administration, intrauterine system, intravaginal contraceptive, intravenous administration, lotion, lozenge, metered dose inhaler (aerosol), nasal spray, oily injection, oily solution, oily suspension for injection, ointment, oral liquid, oral oily solution, oral powder, parenteral formulation, pessary, powder, powder for dilution, powder for injection, powder for oral administration, powder for oral liquid, powder for solution, powder for reconstitution with water, rectal dosage form, rectal solution, respirator solution for use in nebulizers, retention enema, saturated solution, solution, solution (eye drops), solution for dilution, solution for injection, solution for intramuscular injection, solution for IV infusion, solution for IV infusion injection, solution for oromucosal administration, solution or gel, subcutaneous administration, suppository, suspension for intratracheal instillation, tablet (dispersible), tablet (dispersible, scored), topical, topical forms, transdermal patch, vaginal cream, vaginal tablet, vial or prefilled syringe, water-miscible injection |

Table. Search terms and timeframes used in database of Indian exports, API price per kilogram predicted by weighted linear regression, and the average rate of change of the linear regression model, alphabetically by drug name.

Average rates of change in API price per kilogram were increasing in 69 cases, decreasing in 107 cases, with salt sub-analyses counted as individual “cases”.

| Drug name | API data timeframe start date | API data timeframe end date | Search term(s) used | Predicted API price on 1 Jul 2016 (USD/kg) | Average rate of change over 30 days (USD) |
|--------------------------------|--|-----------------------------|--|--|---|
| abacavir (ABC) | 01-Jul-14 | 01-Jul-16 | abacavir | \$538 | \$2.30 |
| acetazolamide | 01-Jul-14 | 01-Jul-16 | acetazolamide | \$58 | \$0.15 |
| acetylsalicylic acid | 01-Jul-14 | 01-Jul-16 | acetylsalicylic acid OR aspirin | \$5 | \$0.02 |
| aciclovir | 01-Jul-10 | 01-Jul-16 | aciclovir | \$81 | \$0.48 |
| aciclovir sodium sterile | manually subset from main drug exim data | | | \$851 | \$10.40 |
| albendazole | 01-Jul-14 | 01-Jul-16 | albendazole | \$28 | \$0.06 |
| all-trans retinoid acid (ATRA) | Insufficient data | Insufficient data | all-trans retinoic acid OR tretinoin | | |
| allopurinol | 01-Jul-14 | 01-Jul-16 | allopurinol | \$34 | \$0.23 |
| amiloride | 01-Jul-14 | 01-Jul-16 | amiloride | \$349 | -\$0.79 |
| amiodarone | 01-Jul-14 | 01-Jul-16 | amiodarone | \$128 | -\$1.34 |
| amitriptyline | 01-Jul-14 | 01-Jul-16 | amitriptyline | \$49 | -\$0.32 |
| amlodipine | 01-Jul-14 | 01-Jul-16 | amlodipine | \$143 | -\$0.83 |
| amodiaquine | 01-Jul-12 | 01-Jul-16 | amodiaquine | \$28 | \$0.09 |
| amoxicillin | 01-Jul-14 | 01-Jul-16 | amoxicillin | \$25 | -\$0.32 |
| amoxicillin + clavulanic acid | Drug combination | Drug combination | | | |
| anastrozole | 01-Jul-14 | 01-Jul-16 | anastrozole | \$48,669 | \$1,023.06 |
| artemether | 01-Jul-14 | 01-Jul-16 | artemether | \$274 | -\$5.97 |
| artemether + lumefantrine | Drug combination | Drug combination | separate searches for artemether, lumefantrine | | |
| artesunate | 01-Jul-14 | 01-Jul-16 | artesunate | \$282 | -\$7.65 |
| artesunate + amodiaquine | Drug combination | Drug combination | | | |
| artesunate + mefloquine | Drug combination | Drug combination | | | |
| atazanavir | 01-Jul-10 | 01-Jul-16 | atazanavir | \$1,189 | -\$19.77 |
| azathioprine | 01-Jul-10 | 01-Jul-16 | azathioprine | \$390 | \$2.07 |
| bedaquiline | Insufficient data | Insufficient data | bedaquiline | | |
| benznidazole | Insufficient data | Insufficient data | benznidazole | | |
| bevacizumab | Insufficient data | Insufficient data | bevacizumab | | |
| bicalutamide | 01-Jul-14 | 01-Jul-16 | bicalutamide | \$1,066 | \$7.32 |
| biperiden | 01-Jul-14 | 01-Jul-16 | biperiden | \$2,677 (HCl salt) | -\$25.02 (HCl salt) |
| bisoprolol | 01-Jul-14 | 01-Jul-16 | bisoprolol | \$435 | -\$2.63 |
| calcium folinate | Insufficient data | Insufficient data | calcium folinate | | |
| capecitabine | 01-Jul-14 | 01-Jul-16 | capecitabine | \$393 | -\$7.65 |
| carbamazepine | 01-Jul-14 | 01-Jul-16 | carbamazepine | \$52 | \$0.22 |
| carbidopa | 01-Jul-14 | 01-Jul-16 | carbidopa | \$445 | -\$1.84 |
| cefalexin | 01-Jul-12 | 01-Jul-16 | cefalexin OR cephalexin | \$49 | -\$0.03 |
| cefixime | 01-Jul-14 | 01-Jul-16 | cefixime | \$162 | -\$1.08 |
| chlorambucil | Insufficient data | Insufficient data | chlorambucil | | |
| chloroquine | 01-Jul-14 | 01-Jul-16 | chloroquine [results of hydroxychloroquine manually censored after download] | \$20 | \$0.02 |
| chloroquine phosphate | manually subset from main drug exim data | | | \$20 | \$0.02 |
| chloroquine sulphate | manually subset from | | | \$43 | \$0.19 |

| | | | | | |
|-----------------------------------|---|----------------------|--|---------|-----------|
| | main drug exim data | | | | |
| chlorpromazine | 01-Jul-12 | 01-Jul-16 | chlorpromazine | \$77 | -\$0.01 |
| ciclosporin | 01-Jul-12 | 01-Jul-16 | ciclosporin OR cyclosporine | \$1,354 | -\$4.77 |
| cilastatin | Insufficient data | Insufficient data | cilastatin | | |
| ciprofloxacin | 01-Jul-14 | 01-Jul-16 | ciprofloxacin (hcl and base manually separated) | \$27 | -\$0.29 |
| ciprofloxacin base | manually subset from main drug exim data | | | \$119 | \$0.66 |
| ciprofloxacin HCl | 01-Jul-14 | 01-Jul-16 | ciprofloxacin (hcl and base manually separated) | \$27 | -\$0.29 |
| ciprofloxacin lactate | 01-Jul-10 | 01-Jul-16 | ciprofloxacin lactate | \$200 | \$1.88 |
| clarithromycin | 01-Jul-14 | 01-Jul-16 | clarithromycin | \$249 | -\$1.07 |
| clavulanic acid | Insufficient data | Insufficient data | clavulanic acid OR clavulanate | | |
| clindamycin | 01-Jul-12 | 01-Jul-16 | clindamycin | \$213 | \$1.07 |
| clindamycin HCl | manually subset from main drug exim data | | | \$213 | \$1.07 |
| clindamycin palmitate | manually subset from main drug exim data | | | \$1,594 | -\$0.42 |
| clindamycin phosphate | manually subset from main drug exim data | | | | |
| clofazimine | 01-Jul-10 | 01-Jul-16 | clofazimine | \$239 | -\$0.23 |
| clomifene | 01-Jul-14 | 01-Jul-16 | clomifene OR clomiphene | \$140 | -\$0.66 |
| clomipramine | 01-Jul-14 | 01-Jul-16 | clomipramine | \$329 | -\$0.67 |
| clopidogrel | 01-Jul-14 | 01-Jul-16 | clopidogrel | \$176 | -\$5.99 |
| clopidogrel besylate | manually subset from main drug exim data | | | \$176 | -\$5.99 |
| clopidogrel bisulfate | manually subset from main drug exim data | | | \$230 | -\$2.91 |
| cloxacillin | 01-Jul-14 | 01-Jul-16 | cloxacillin | \$24 | -\$0.28 |
| clozapine | 01-Jul-10 | 01-Jul-16 | clozapine | \$189 | -\$0.55 |
| codeine | Insufficient data | Insufficient data | codeine AND (NOT ibuprofen) AND (NOT paracetamol) AND (NOT caffeine) | | |
| cyclizine | 01-Jul-10 | 01-Jul-16 | cyclizine | \$84 | -\$0.52 |
| cyclophosphamide | 01-Jul-10 | 01-Jul-16 | cyclophosphamide | \$1,563 | \$44.18 |
| cycloserine | 01-Jul-10 | 01-Jul-16 | cycloserine | \$805 | -\$5.50 |
| daclatasvir | 01-Jul-14 | 01-Jul-16 | daclatasvir | \$852 | -\$145.52 |
| dapsone | 01-Jul-14 | 01-Jul-16 | dapsone | \$30 | \$0.91 |
| darunavir | 01-Jul-14 | 01-Jul-16 | darunavir | \$1,588 | -\$41.76 |
| dasabuvir | Insufficient data | Insufficient data | dasabuvir | | |
| delamanid | Insufficient data | Insufficient data | delamanid | | |
| dexamethasone | 01-Jul-10 | 01-Jul-16 | dexamethasone (split into dexamethasone alone and dexamethasone sodium phosphate) | \$1,501 | -\$3.50 |
| dexamethasone (no salt) | manually subset from main drug exim data | | | \$1,482 | -\$7.17 |
| dexamethasone sodium phosphate | manually subset from main drug exim data | | | \$1,501 | -\$3.50 |
| diazepam | 01-Jul-10 | 01-Jul-16 | diazepam | \$131 | \$1.16 |
| diethylcarbamazine | 01-Jul-10 | 01-Jul-16 | diethylcarbamazine | \$13 | -\$0.22 |
| digoxin | 01-Jul-10 | 01-Jul-16 | digoxin | \$7,081 | \$34.14 |

| | | | | | |
|--|--|-------------------------------|--|-----------|--------------|
| diloxanide | 01-Jul-14 | 01-Jul-16 | diloxanide | \$22 | -\$0.09 |
| docusate sodium | 01-Jul-14 | 01-Jul-16 | docusate sodium | \$11 | -\$0.01 |
| doxorubicin | 01-Jul-14 | 01-Jul-16 | doxorubicin | \$36,550 | -\$425.07 |
| doxycycline | 01-Jul-10 | 01-Jul-16 | doxycycline | \$283 | -\$2.30 |
| doxycycline hyclate | manually subset from main drug exim data | | | \$144 | -\$0.73 |
| doxycycline monohydrate | manually subset from main drug exim data | | | \$283 | -\$2.30 |
| efavirenz (EFV or EFZ) | 01-Jul-14 | 01-Jul-16 | efavirenz | \$109 | -\$1.08 |
| efavirenz + emtricitabine + tenofovir | Drug combination | Drug combination | | | |
| emtricitabine | 01-Jul-14 | 01-Jul-16 | | \$312 | \$0.28 |
| emtricitabine + tenofovir | Drug combination | Drug combination | | | |
| enalapril | 01-Jul-14 | 01-Jul-16 | enalapril | \$152 | \$0.22 |
| entecavir | 01-Jul-10 | 01-Jul-16 | entecavir | \$669,376 | -\$25,754.81 |
| erythromycin | Salts sub-analysed separately | Salts sub-analysed separately | erythromycin | | |
| erythromycin estolate | manually subset from main drug exim data | | | \$41 | -\$0.70 |
| erythromycin ethyl succinate | manually subset from main drug exim data | | | \$69 | \$0.06 |
| erythromycin phosphate | manually subset from main drug exim data | | | \$91 | -\$0.06 |
| erythromycin propionate | Insufficient data | Insufficient data | | | |
| erythromycin stearate | manually subset from main drug exim data | | | \$41 | -\$0.03 |
| estradiol cypionate | Insufficient data | Insufficient data | | | |
| ethambutol | 01-Jul-14 | 01-Jul-16 | ethambutol | \$42 | \$0.08 |
| ethambutol + isoniazid | Drug combination | Drug combination | | | |
| ethambutol + isoniazid + pyrazinamide + rifampicin | Drug combination | Drug combination | | | |
| ethambutol + isoniazid + rifampicin | Drug combination | Drug combination | | | |
| ethinylestradiol | 01-Jul-10 | 01-Jul-16 | ethinyl estradiol OR ethinylestradiol OR ethinyloestradiol | | |
| ethinylestradiol + levonorgestrel | Drug combination | Drug combination | | | |
| ethinylestradiol + norethisterone | Drug combination | Drug combination | | | |
| ethionamide | Insufficient data | Insufficient data | ethionamide | | |
| ethosuximide | Insufficient data | Insufficient data | ethosuximide | | |
| etoposide | 01-Jul-10 | 01-Jul-16 | etoposide | \$8,463 | -\$15.83 |
| ferrous salt + folic acid | Drug combination | Drug combination | | | |
| fluconazole | 01-Jul-14 | 01-Jul-16 | fluconazole | \$142 | -\$1.15 |
| flucytosine | 01-Jul-10 | 01-Jul-16 | flucytosine | \$1,377 | -\$5.62 |
| fludarabine | Insufficient data | Insufficient data | fludarabine | | |
| fludrocortisone | Insufficient data | Insufficient data | fludrocortisone | | |
| fluoxetine | 01-Jul-14 | 01-Jul-16 | fluoxetine | \$71 | \$0.67 |

| | | | | | |
|---------------------------------------|--|-------------------|---|---------|-------------|
| folic acid | 01-Jul-14 | 01-Jul-16 | folic acid OR folate | \$462 | \$18.93 |
| furosemide | 01-Jul-14 | 01-Jul-16 | furosemide OR frusemide | \$37 | \$0.02 |
| gliclazide | 01-Jul-14 | 01-Jul-16 | gliclazide | \$137 | \$0.80 |
| glyceryl trinitrate | 01-Jul-10 | 01-Jul-16 | glyceryl trinitrate | \$39 | -\$0.16 |
| griseofulvin | 01-Jul-10 | 01-Jul-16 | griseofulvin | \$115 | \$0.25 |
| haloperidol | 01-Jul-14 | 01-Jul-16 | haloperidol | \$331 | -\$0.28 |
| hydralazine | 01-Jul-12 | 01-Jul-16 | hydralazine | \$316 | \$2.12 |
| hydrochlorothiazide | 01-Jul-14 | 01-Jul-16 | hydrochlorothiazide | \$25 | -\$0.10 |
| hydrocortisone | 01-Jul-14 | 01-Jul-16 | hydrocortisone OR cortisol | \$691 | -\$8.65 |
| hydrocortisone (salt agnostic) | manually subset from main drug exim data | | | \$691 | -\$8.78 |
| hydrocortisone acetate | manually subset from main drug exim data | | | \$960 | \$1.09 |
| hydrocortisone succinate | manually subset from main drug exim data | | | \$691 | -\$8.65 |
| hydroxycarbamide | Insufficient data | Insufficient data | hydroxycarbamide OR hydroxyurea | | |
| hydroxychloroquine | 01-Jul-12 | 01-Jul-16 | hydroxychloroquine | \$145 | -\$0.51 |
| ibuprofen | 01-Jul-14 | 01-Jul-16 | ibuprofen AND NOT tablet AND (NOT (paracetamol OR codeine OR caffeine)) | \$10 | -\$0.01 |
| imatinib | 01-Jul-14 | 01-Jul-16 | imatinib | \$2,284 | -\$6.36 |
| imipenem | Insufficient data | Insufficient data | imipenem | | |
| isoniazid | 01-Jul-14 | 01-Jul-16 | isoniazid | \$16 | -\$0.01 |
| isoniazid + pyrazinamide + rifampicin | Drug combination | Drug combination | | | |
| isoniazid + rifampicin | Drug combination | Drug combination | | | |
| isosorbide dinitrate | Insufficient data | Insufficient data | isosorbide dinitrate | | |
| ivermectin | Insufficient data | Insufficient data | ivermectin | | |
| lamivudine (3TC) | 01-Jul-14 | 01-Jul-16 | lamivudine | \$241 | |
| lamivudine + nevirapine + stavudine | Drug combination | Drug combination | | | |
| lamivudine + nevirapine + zidovudine | Drug combination | Drug combination | | | |
| lamivudine + zidovudine | Drug combination | Drug combination | | | |
| ledipasvir | 01-Jul-10 | 01-Jul-16 | ledipasvir | \$4,448 | -\$1,290.61 |
| ledipasvir + sofosbuvir | Drug combination | Drug combination | | | |
| levamisole | 01-Jul-10 | 01-Jul-16 | levamisole | \$28 | -\$0.08 |
| levodopa | 01-Jul-10 | 01-Jul-16 | levodopa | \$161 | \$0.22 |
| levodopa + carbidopa | Drug combination | Drug combination | | | |
| levofloxacin | 01-Jul-14 | 01-Jul-16 | levofloxacin | \$142 | -\$2.67 |
| levonorgestrel | Insufficient data | Insufficient data | levonorgestrel | | |
| levothyroxine | Insufficient data | Insufficient data | levothyroxine | | |
| linezolid | 01-Jul-14 | 01-Jul-16 | linezolid | \$690 | \$0.27 |
| lithium carbonate | 01-Jul-10 | 01-Jul-16 | lithium carbonate | \$15 | \$0.12 |
| loperamide | 01-Jul-14 | 01-Jul-16 | loperamide | \$234 | -\$3.09 |
| lopinavir | 01-Jul-10 | 01-Jul-16 | lopinavir | \$555 | -\$15.80 |
| lopinavir + ritonavir (LPV/r) | Drug combination | Drug combination | | | |
| loratadine | 01-Jul-14 | 01-Jul-16 | loratadine AND (NOT tablets) | \$281 | -\$0.51 |
| lumefantrine | 01-Jul-14 | 01-Jul-16 | lumefantrine | \$36 | -\$0.28 |
| mebendazole | 01-Jul-14 | 01-Jul-16 | mebendazole | \$22 | -\$0.31 |
| medroxyprogesterone acetate | Insufficient data | Insufficient data | medroxyprogesterone acetate | | |
| mefloquine | 01-Jul-10 | 01-Jul-16 | mefloquine | \$861 | \$3.56 |
| meglumine antimoniate | Insufficient data | Insufficient data | | | |

| | | | | | |
|---------------------------------------|--|-------------------------------|---|----------|-----------|
| mercaptapurine | 01-Jul-10 | 01-Jul-16 | mercaptapurine | \$292 | \$1.64 |
| mesna | 01-Jul-10 | 01-Jul-16 | mesna | \$666 | -\$1.91 |
| metformin | 01-Jul-15 | 01-Jul-16 | metformin | \$4 | \$0.00 |
| methotrexate | 01-Jul-10 | 01-Jul-16 | methotrexate | \$77,181 | \$956.26 |
| methylidopa | Insufficient data | Insufficient data | methylidopa | | |
| metoclopramide | 01-Jul-14 | 01-Jul-16 | metoclopramide | \$77 | \$0.00 |
| metronidazole | 01-Jul-14 | 01-Jul-16 | metronidazole | \$12 | -\$0.06 |
| metronidazole (benzoate) | manually subset from main drug exim data | | | \$11 | \$0.00 |
| metronidazole (no salt) | manually subset from main drug exim data | | | \$12 | -\$0.06 |
| midazolam | 01-Jul-14 | 01-Jul-16 | midazolam | \$5,256 | \$110.37 |
| mifepristone | 01-Jul-10 | 01-Jul-16 | skipped, no mifepristone alone | \$4,812 | -\$16.89 |
| mifepristone - misoprostol | Drug combination | Drug combination | | | |
| miltefosine | Insufficient data | Insufficient data | miltefosine | | |
| misoprostol | Insufficient data | Insufficient data | misoprostol | | |
| morphine | Insufficient data | Insufficient data | morphine | | |
| morphine | Insufficient data | Insufficient data | morphine | | |
| neostigmine | 01-Jul-10 | 01-Jul-16 | neostigmine | \$18,050 | \$259.72 |
| nevirapine (NVP) | 01-Jul-10 | 01-Jul-16 | nevirapine | \$165 | \$0.05 |
| niclosamide | 01-Jul-10 | 01-Jul-16 | niclosamide | \$9 | -\$0.25 |
| niclosamide (no salt) | 01-Jul-10 | 01-Jul-16 | manually subset from main drug exim data | | |
| niclosamide anhydrous | 01-Jul-10 | 01-Jul-16 | manually subset from main drug exim data | \$9 | -\$0.25 |
| niclosamide piperazine | 01-Jul-10 | 01-Jul-16 | manually subset from main drug exim data | \$9 | -\$0.13 |
| nifedipine | 01-Jul-14 | 01-Jul-16 | nifedipine | \$70 | \$1.35 |
| nifurtimox | Insufficient data | Insufficient data | nifurtimox | | |
| nitrofurantoin | 01-Jul-12 | 01-Jul-16 | nitrofurantoin | \$295 | -\$7.90 |
| norethisterone | Salts sub-analysed separately | Salts sub-analysed separately | (norethisterone OR norethindrone) AND NOT (enantate OR enanthate) | | |
| norethisterone (no salt) | 01-Jul-10 | 01-Jul-16 | | \$1,235 | \$0.02 |
| norethisterone acetate | 01-Jul-10 | 01-Jul-16 | | \$1,272 | -\$0.98 |
| nystatin | Insufficient data | Insufficient data | nystatin | | |
| ofloxacin | 01-Jul-14 | 01-Jul-16 | ofloxacin | \$107 | -\$0.21 |
| ombitasvir | 01-Jul-10 | 01-Jul-16 | ombitasvir | | |
| ombitasvir + paritaprevir + ritonavir | Drug combination | Drug combination | | | |
| omeprazole | 01-Jul-15 | 01-Jul-16 | omeprazole | \$14 | -\$0.15 |
| ondansetron | 01-Jul-14 | 01-Jul-16 | ondansetron AND (NOT tablets) AND (NOT tabs) | \$990 | \$11.97 |
| ondansetron base | 01-Jul-10 | 02-Jul-16 | manually subset from main drug exim data | \$2,101 | \$17.99 |
| ondansetron hydrochloride | manually subset from main drug exim data | | | \$990 | \$11.97 |
| oseltamivir | 01-Jul-14 | 01-Jul-16 | oseltamivir | \$1,860 | -\$34.25 |
| oxaliplatin | 01-Jul-10 | 01-Jul-16 | oxaliplatin | \$63,857 | -\$141.54 |
| oxamniquine | Insufficient data | Insufficient data | oxamniquine | | |
| oxytocin | 01-Jul-14 | 01-Jul-16 | oxytocin | \$53,450 | -\$555.86 |
| p-aminosalicylic acid | Insufficient data | Insufficient data | p-aminosalicylic acid OR p-aminosaclylate OR para-aminosalicylic acid OR para-aminosalicylate OR 4-aminosalicylic acid OR 4-aminosalicylate | | |
| paracetamol | 01-Jul-15 | 01-Jul-16 | paracetamol | \$4 | -\$0.07 |

| | | | | | |
|-------------------------------|--|-------------------|---|---------|----------|
| paritaprevir | Insufficient data | Insufficient data | | | |
| penicillamine | 01-Jul-10 | 01-Jul-16 | penicillamine | \$1,724 | \$9.47 |
| pentamidine | Insufficient data | Insufficient data | pentamidine | | |
| phenobarbital | 01-Jul-14 | 01-Jul-16 | phenobarbital OR phenobarbitone OR phenobarb | \$76 | \$0.42 |
| phenobarbital (no salt) | 01-Jul-14 | 01-Jul-16 | phenobarbital OR phenobarbitone OR phenobarb | \$36 | \$0.26 |
| phenobarbital (sodium) | 01-Jul-10 | 01-Jul-16 | (phenobarbital OR phenobarbitone OR phenobarb) AND sodium | \$76 | \$0.42 |
| phenoxymethylpenicillin | Insufficient data | Insufficient data | phenoxymethylpenicillin OR penicillin V | | |
| phenytoin | 01-Jul-14 | 01-Jul-16 | phenytoin | \$17 | -\$0.04 |
| phenytoin (no salt) | manually subset from main drug exim data | | | \$17 | \$0.05 |
| phenytoin (sodium) | manually subset from main drug exim data | | | \$17 | -\$0.04 |
| potassium iodide | 01-Jul-14 | 01-Jul-16 | potassium iodide | \$20 | -\$0.43 |
| praziquantel | 01-Jul-14 | 01-Jul-16 | praziquantel | \$148 | \$0.89 |
| prednisolone | 01-Jul-14 | 01-Jul-16 | prednisolone | \$962 | -\$31.03 |
| prednisolone (no salt) | manually subset from main drug exim data | | | \$707 | -\$6.98 |
| prednisolone acetate | 01-Jul-10 | 01-Jul-16 | manually subset from main drug exim data | \$1,349 | \$4.25 |
| prednisolone hemisuccinate | 01-Jul-10 | 01-Jul-16 | manually subset from main drug exim data | \$1,247 | \$2.20 |
| prednisolone sodium phosphate | 01-Jul-12 | 01-Jul-16 | manually subset from main drug exim data | \$1,261 | -\$11.08 |
| prednisolone valerate acetate | 01-Jul-10 | 01-Jul-16 | manually subset from main drug exim data | | |
| primaquine | 01-Jul-10 | 01-Jul-16 | primaquine | \$381 | -\$2.15 |
| procarbazine | Insufficient data | Insufficient data | procarbazine | | |
| proguanil | 01-Jul-10 | 01-Jul-16 | proguanil | \$264 | \$2.05 |
| propranolol | 01-Jul-14 | 01-Jul-16 | propranolol | \$36 | \$0.16 |
| propylthiouracil | Insufficient data | Insufficient data | propylthiouracil | | |
| pyrantel | 01-Jul-14 | 01-Jul-16 | pyrantel | \$31 | -\$0.11 |
| pyrazinamide | 01-Jul-14 | 01-Jul-16 | pyrazinamide | \$22 | \$0.09 |
| pyridostigmine | Insufficient data | Insufficient data | pyridostigmine | | |
| pyrimethamine | 01-Jul-14 | 01-Jul-16 | pyrimethamine | \$53 | \$0.03 |
| quinine | 01-Jul-14 | 01-Jul-16 | quinine | \$116 | \$0.00 |
| quinine (bi)sulfate | manually subset from main drug exim data | | | \$111 | -\$0.02 |
| quinine HCl | manually subset from main drug exim data | | | \$116 | \$0.00 |
| ranitidine | 01-Jul-15 | 01-Jul-16 | ranitidine | \$19 | -\$0.04 |
| ribavirin | 01-Jul-10 | 01-Jul-16 | ribavirin | \$122 | -\$5.40 |
| rifabutin | 01-Jul-10 | 01-Jul-16 | rifabutin | \$2,077 | \$2.01 |
| rifampicin | 01-Jul-14 | 01-Jul-16 | rifampicin OR rifampin | \$112 | -\$0.20 |
| rifapentine | Insufficient data | Insufficient data | rifapentine | | |
| risperidone | 01-Jul-14 | 01-Jul-16 | risperidone | \$1,466 | \$28.42 |
| ritonavir | 01-Jul-12 | 01-Jul-16 | ritonavir | \$1,665 | -\$3.22 |
| saquinavir (SQV) | 01-Jul-10 | 01-Jul-16 | saquinavir | \$898 | -\$5.10 |
| senna | Insufficient data | Insufficient data | senna | | |
| simeprevir | Insufficient data | Insufficient data | simeprevir | | |
| simvastatin | 01-Jul-14 | 01-Jul-16 | simvastatin | \$246 | -\$1.32 |

| | | | | | |
|-------------------------------------|-------------------|-------------------|---|---------|---------|
| sodium stibogluconate | Insufficient data | Insufficient data | | | |
| sofosbuvir | 01-Jul-14 | 01-Jul-16 | sofosbuvir | \$1,224 | |
| spironolactone | Insufficient data | Insufficient data | spironolactone | | |
| stavudine (d4T) | 01-Jul-10 | 01-Jul-16 | stavudine | \$193 | -\$1.72 |
| succimer | Insufficient data | Insufficient data | succimer | | |
| sulfadiazine | 01-Jul-14 | 01-Jul-16 | sulfadiazine | \$292 | \$0.23 |
| sulfadoxine | 01-Jul-10 | 01-Jul-16 | | \$83 | \$1.01 |
| sulfadoxine + pyrimethamine | Drug combination | Drug combination | | | |
| sulfamethoxazole | 01-Jul-14 | 01-Jul-16 | sulfamethoxazole | \$10 | \$0.01 |
| sulfamethoxazole + trimethoprim | Drug combination | Drug combination | | | |
| sulfasalazine | 01-Jul-10 | 01-Jul-16 | sulfasalazine | \$39 | -\$0.39 |
| tamoxifen | 01-Jul-10 | 01-Jul-16 | tamoxifen | \$271 | -\$0.96 |
| tenofovir disoproxil fumarate (TDF) | 01-Jul-14 | 01-Jul-16 | tenofovir disoproxil fumarate (TDF) | \$182 | -\$1.84 |
| tetracaine | 01-Jul-12 | 01-Jul-16 | tetracaine | \$157 | -\$0.26 |
| tetracycline | 01-Jul-10 | 01-Jul-16 | tetracycline | \$32 | \$0.17 |
| tioguanine | Insufficient data | Insufficient data | thioguanine, tioguanine | | |
| triclabendazole | 01-Jul-14 | 01-Jul-16 | triclabendazole | \$44 | -\$0.76 |
| trimethoprim | 01-Jul-14 | 01-Jul-16 | trimethoprim | \$30 | -\$0.07 |
| valganciclovir | 01-Jul-10 | 01-Jul-16 | valganciclovir | \$2,391 | \$8.83 |
| valproic acid (sodium valproate) | 01-Jul-14 | 01-Jul-16 | valproic acid OR valproate | \$26 | \$0.05 |
| verapamil | 01-Jul-12 | 01-Jul-16 | verapamil | \$73 | \$0.18 |
| warfarin | 01-Jul-14 | 01-Jul-16 | warfarin | \$519 | -\$3.37 |
| zidovudine (ZDV or AZT) | 01-Jul-14 | 01-Jul-16 | zidovudine OR azidothymidine AND NOT tablet AND NOT lamivudine AND NOT nevirapine | \$252 | -\$7.38 |
| zinc sulfate | 01-Jul-10 | 01-Jul-16 | zinc sulfate | \$2 | -\$0.12 |

Criteria used for cleaning export data.

| Reason for censoring | Example of product description that would trigger censoring |
|---|---|
| Incorrect substance identified | "DIAMORPHINE" (in a search for "morphine") |
| Item is part of a mix of products | "ABACAVIR, LOPINAVIR, LAMIVUDINE API" |
| Quantity of shipment < 1.0 kg, with exceptions made for very low-dose medicines | Value listed in "quantity" variable greater than 1.0kg |
| Finished Pharmaceutical Product (FPP), for example tablets | "ABACAVIR SULFATE TABLETS 600MG" |
| Impurity | "ABACAVIR SULPHATE IMPURITY" |
| Unclear quantity of API | "ABACAVIR GRANULES 10%" (In this example, the percentage descriptor could refer to a variety of parameters, for example, moisture content. As this is not specified, the true amount of API is unknown.) |
| Free sample or 'no commercial value' | "ABACAVIR SULPHATE FREE SAMPLE" "ABACAVIR SULPHATE N.C.V." |
| For veterinary use | "IVERMECTIN VETERINARY" |
| Reference/working standard | "ABACAVIR WORKING STANDARD" |

Costs of excipients used in solid oral formulations, and typical proportion of total FPP weight made up by each excipient.

Data on excipient costs and typical proportion of FPP weight from Fortunak et al and Rowe et al.[7,8] Midpoints of the percentage ranges for typical proportions of FPP weight represented by various excipients reported by Rowe et al summate to more than 100%, while excipients typically represent about half of the finished pill weight, with API representing the other half. This is likely because multiple alternative excipients serving the same function have been included – for example, both cellulose and calcium phosphate are diluents. To calculate an average cost, all percentages were scaled to summate to 50% (a typical proportion of FPP weight made up of excipients), and the average total cost of all excipients listed was calculated for 1kg of FPP. In other words, we estimate 1kg of FPP in tablets would contain 500 grams of API, and 500 grams of excipients costing \$2.63/kg (see table).

| Excipient | Typical % of weight FPP | Cost per kg (USD) | Midpoint cost/kg | Midpoint % of FPP weight | Percentage s scaled to summate to 50% | Cost of excipient per 1 kg of FPP (USD) |
|---|-------------------------|-------------------|------------------|--------------------------|---------------------------------------|---|
| Sodium benzoate | 1%–3% | 1.62–2.19 | \$1.91 | 2.0% | 0.58% | \$0.01 |
| Cellulose or microcrystalline cellulose | 10%–60% | 2–3.22 | \$2.61 | 35.0% | 10.22% | \$0.27 |
| Talc | 0.2%–2% | 2–3.57 | \$2.79 | 1.1% | 0.32% | \$0.01 |
| Sodium starch glycolate | 1%–5% | 0.96–4.93 | \$2.95 | 3.0% | 0.88% | \$0.03 |
| Crospovidone | 2%–5% | 3.03–3.03 | \$3.03 | 3.5% | 1.02% | \$0.03 |
| Lactose | 5%–40% | 3.03–3.77 | \$3.40 | 22.5% | 6.57% | \$0.22 |
| Xylitol | 5%–10% | 2.2–5.75 | \$3.98 | 7.5% | 2.19% | \$0.09 |
| Calcium phosphate, dibasic | 5%–50% | 2.46–5.7 | \$4.08 | 27.5% | 8.03% | \$0.33 |
| Carboxymethylcellulose sodium | 5%–25% | 3.25–5.99 | \$4.62 | 15.0% | 4.38% | \$0.20 |
| Starch, pregelatinised | 5%–35% | 2–9 | \$5.50 | 20.0% | 5.84% | \$0.32 |
| Xanthan gum | 5%–15% | 5.02–7.44 | \$6.23 | 10.0% | 2.92% | \$0.18 |
| Croscarmellose sodium | 1%–5% | 6.56–9.51 | \$8.04 | 3.0% | 0.88% | \$0.07 |
| Methyl paraben | 1%–2% | 11.5–11.5 | \$11.50 | 1.5% | 0.44% | \$0.05 |
| Povidone | 5%–20% | 8.59–17.11 | \$12.85 | 12.5% | 3.65% | \$0.47 |
| Magnesium stearate | 0.25%–4% | 4.3–23.5 | \$13.90 | 2.1% | 0.62% | \$0.09 |
| Potassium sorbate | 0%–2% | 18–37 | \$27.50 | 1.0% | 0.29% | \$0.08 |
| Sodium lauryl sulfate | 1%–2% | 36–51 | \$43.50 | 1.5% | 0.44% | \$0.19 |
| Aluminium oxide | 0%–5% | not available | not available | 2.5% | 0.73% | not available |
| Total | N/A | N/A | N/A | 171.2% | 50.0% | \$2.63 |

Exchange rates

Exchange rates assumed were 1 GBP = 1.3 USD, 1 ZAR = 0.075 USD, 1 INR = 0.015 USD.

Breakdown of estimated formulating plant costs by Chaudhuri et al, with additional notes on cost of environmental compliance, and quality assurance and control

A detailed costing estimate for setting up a pharmaceutical formulating plant was undertaken by Chaudhuri et al in 2015.[10] This analysis was based on interviews with “22 persons from 10 medium and small firms [...] in the cities of Kolkata and Mumbai” and undertaken by a team of a cost accountant, two company production executives, and an economist. The estimation assumed a GMP-compliant plant that manufactures (formulates) 5 different finished pharmaceutical products, and does not conduct any API synthesis or R&D. A breakdown of their estimates, and our derivation of a per-tablet overall conversion cost estimate, are given below, with notes on their estimates for costs associated with environmental compliance and quality assurance/control.

Table. Estimated capital expenditures to set up for an Indian manufacturing plant, based on estimates by Chaudhuri et al 2015.

| Item | Cost (USD) |
|---|-------------|
| Compression machines (3 units) | \$44,714 |
| Sifters (2 units) | \$5,589 |
| Fluid bed dryer (1 unit) | \$33,536 |
| Multi mill (2 units) | \$11,179 |
| Coating machine (1 unit) | \$27,946 |
| Air handling units | \$186,309 |
| Chillers | \$74,524 |
| Packing machinery: | |
| 1 blister pack machine | \$14,905 |
| 1 strip pack machine | \$7,452 |
| Ancillary equipment | \$27,946 |
| Electrical installations | \$93,155 |
| Effluent treatment plant (ETP) | \$18,631 |
| Material handling equipment | \$9,315 |
| Office furniture and fixtures | \$9,315 |
| Miscellaneous project expenses | \$9,315 |
| Quality control laboratory | \$465,773 |
| Factory and office building | \$670,712 |
| Total | \$1,710,317 |
| INR values adjusted for inflation using http://calculatorstack.com/inflation-calculator-india.php and converted to USD using exchange rate on 1 Jan 2017. | |

We consider that the Chaudhuri et al estimated capital costs adequately represent environmental regulation and quality assurance/control costs, as we find that estimates in a 2013 Indian government white paper are similar or lower. The white paper estimated the capital expenditures relating to pollution control to be US\$25,462–\$33,949 (INR values adjusted for inflation using <http://calculatorstack.com/inflation-calculator-india.php> and converted to USD using exchange rate on 1 Jan 2017).²⁴ This is slightly higher than the Chaudhuri et al estimate of US\$18,631, but the white paper’s estimate appears to have been for API-manufacturing plants, which are likely to have more challenging waste product profiles compared to a formulating plant. The white paper estimated capital expenditures for quality assurance and control to be US\$149,000–\$214,000, compared to the significantly higher estimate of US\$466,000 by Chaudhuri et al.

Table. Estimated yearly operating expenditures for an Indian manufacturing plant, based on estimates by Chaudhuri et al 2015.

| Item | INR per annum |
|---|---------------|
| Fixed costs: | |
| <i>Depreciation</i> | 13,997,534 |
| <i>Interest cost</i> | 10,929,938 |
| <i>Salaries and wages for permanent employees</i> | 13,182,600 |
| <i>Repair and maintenance</i> | 3,048,000 |
| <i>Power and fuel</i> | 7,620,000 |
| <i>Other running costs</i> | 5,020,975 |
| Total fixed costs: | 53,799,047 |
| Variable costs: | |
| <i>Wages of casual workers</i> | 4,267,200 |
| <i>Sales and distribution</i> | 50,557,765 |
| Total variable costs: | 54,824,965 |
| Total (fixed + variable) costs: | 108,624,012 |
| Net of sales and distribution: | 58,066,247 |
| INR values adjusted for inflation using http://calculatorstack.com/inflation-calculator-india.php . The original analysis by Chaudhuri et al includes material costs and excise duty in their analysis. These components have been excluded here as we calculate our own estimates for these components in this analysis. | |

Per-tablet total conversion cost (operating expenditure + depreciation of capital expenditure) derived from Chaudhuri et al 2015, with sales and distribution included versus excluded.

Materials costs and tax-related costs are not included.

| | INR | USD |
|--|-------------|-------------|
| Plant-wide costs per year Including sales and distribution | 108,624,012 | \$1,593,514 |
| Plant-wide costs per year not including sales and distribution | 58,066,247 | \$851,832 |
| Total units manufactured | | 151,623,000 |
| Per-tablet cost including sales and distribution | 0.72 | \$0.0105 |
| Per-tablet cost not including sales and distribution | 0.38 | \$0.0056 |
| INR values adjusted for inflation using http://calculatorstack.com/inflation-calculator-india.php and converted to USD using exchange rate 1 INR= 0.01467 USD. | | |

We thus derive from the estimates by Chaudhuri et al that the per-tablet cost of manufacture including operating expenditures and depreciated capital expenditures range from US\$0.0056 if sales and distribution costs are not included to US\$0.0105 per tablet if they are.

Costs of environmental compliance paperwork for manufacturing companies in India.

| Item | Frequency of submission | Estimated money spent per year (INR) | Estimated money spent per year (USD) |
|---|-------------------------|--------------------------------------|--------------------------------------|
| Form 4 | Yearly | 791 | \$13.43 |
| Environment Audit Report (Annexure XXX)-Form-V) | Yearly | 3,427 | \$58.17 |
| Water Consumed & Prevention of Pollution | Monthly | 10,404 | \$176.60 |
| Reading of Energy Return – Water Circulation | Monthly | 8,808 | \$149.51 |
| Hazardous Wastes Return | Monthly | 9,492 | \$161.12 |
| SPM & Ambient Air | Quarterly | 3,468 | \$58.87 |
| Totals | | 36,390 | \$618 |

Data adapted and inflation adjusted from a 2013 report by Deloitte & the Confederation of Indian Industry.[25] Based on the above values, we consider the cost of environmental compliance paperwork negligible as a proportion of the per-tablet cost of production.

References

- 1 WHO Model List of Essential Medicines - 19th List (April 2015, amended November 2015). Available from http://www.who.int/medicines/publications/essentialmedicines/EML_2015_FINAL_amended_NOV2015.pdf?ua=1 (accessed 17 Aug 2017).
- 2 PricewaterhouseCoopers. The changing dynamics of pharma outsourcing in Asia: are you readjusting your sights? Available from <https://www.pwc.be/en/pharma/the-changing-dynamics-of-pharma-outsourcing-in-asia.pdf> (accessed 17 Aug 2017).
- 3 Zhang J. Comparing China's And India's Pharmaceutical Manufacturing. Pharm. Online. 2012; published online Aug 30. Available from <http://www.pharmaceuticalonline.com/doc/comparing-china-s-and-india-s-pharmaceutical-manufacturing-0001> (accessed 17 Aug 2017).
- 4 World Health Organization. Medicines/Finished Pharmaceutical Products. Available from <https://extranet.who.int/prequal/content/prequalified-lists/medicines> (accessed 18 Aug 2017).
- 5 Infodrive India. Available from <http://www.infodriveindia.com/> (accessed 18 Aug 2017).
- 6 Central Board of Excise and Customs. Notification No. 128/2004. Available from <http://www.cbec.gov.in/htdocs-cbec/customs/cs-act/notifications/notfns-2004/cs-nt2004/csnt128-2k4> (accessed 18 Aug 2017).
- 7 Fortunak J, Ngozwana S, Gebre-Mariam T, et al. Raising the Technological Level: The Scope for API, Excipients, and Biologicals Manufacture in Africa. In: Mackintosh M, Banda G, Tibandebage P, Wamae W, editors. Making Medicines in Africa: the political economy of industrializing for local health. Pages 122–43. Palgrave Macmillan, Basingstoke and New York. 2016.
- 8 Rowe R, Sheskey P, Cook W, et al. American Pharmacists Association, editors. Handbook of pharmaceutical excipients, 7th edition. The Pharmaceutical Press, London. 2012.
- 9 National Pharmaceutical Pricing Authority. S.O. 3013(E). Available from <http://www.nppaindia.nic.in/norms/press27dec12/so3013e-27-12-12.html> (accessed Jan 1, 2017).
- 10 Chaudhuri S, West A. Can local producers compete with low-cost imports? A simulation study of pharmaceutical industry in low-income Africa. *Innov Dev* 2015; **5**: 23–38.
- 11 Keeling D, Lösch M, Schrader U. McKinsey & Company. Outlook on pharma operations. Available from http://www.mckinsey.com/~media/mckinsey/dotcom/client_service/operations/pdfs/outlook_on_pharma_operations.ashx (accessed 18 Aug 2017).
- 12 Income Tax Department. Tax Rates. Available from <https://web.archive.org/web/20170106164457/http://www.incometaxindia.gov.in/charts%20%20tables/tax%20rates.htm> (accessed 18 Aug 2017).
- 13 Income Tax Department. Tax Rates. Available from <http://www.incometaxindia.gov.in/Tutorials/2%20Tax%20Rates.pdf> (accessed 18 Aug 2017).
- 14 National Investment Promotion Agency. Pharmaceuticals. 2012. Available from <http://www.investindia.gov.in/pharmaceuticals-sector/> (accessed 18 Aug 2017).
- 15 Ministry of Commerce & Industry. Incentives and facilities offered to the SEZs. 2017. Available from <http://www.sezindia.nic.in/about-fi.asp> (accessed 18 Aug 2017).
- 16 Mazumdar M. Performance of pharmaceutical companies in India: a critical analysis of industrial structure, firm specific resources, and emerging strategies. Physica-Verlag, Heidelberg. 2013.
- 17 Karamehic J, Ridic O, Ridic G, et al. Financial aspects and the future of the pharmaceutical industry in the United States of america. *Mater Sociomed* 2013; **25**: 286–90.
- 18 South Africa Department of Health. Master Procurement Catalogue. Available from <http://www.health.gov.za/index.php/component/phocadownload/category/196> (accessed May 12, 2017).
- 19 Tamil Nadu Medical Services Corporation Limited. Essential Drugs 2016-17. Available from http://www.tnmsc.com/tnmsc/new/user_pages/drugtender.php?drugcat=drug2016 (accessed 17 Aug 2017).
- 20 Tamil Nadu Medical Services Corporation Limited. Specialty 2016-17. Available from http://www.tnmsc.com/tnmsc/new/user_pages/drugtender.php?drugcat=sdg2016 (accessed 17 Aug 2017).
- 21 Vinod Kumar Memorial Charitable Trust. MedGuideIndia.com. Available from <http://www.medguideindia.com/> (accessed Aug 18, 2017).

- 22 Royal Pharmaceutical Society. British National Formulary. Available from <https://www.medicinescomplete.com/mc/bnf/current/> (accessed 17 Aug 2017).
- 23 Department of Health. Drugs and pharmaceutical electronic market information tool (eMit). Available from <https://www.gov.uk/government/publications/drugs-and-pharmaceutical-electronic-market-information-emit> (accessed 17 Aug 2017).
- 24 Pharmaceutical Technology Upgradation Assistance Scheme (PTUAS): DETAILED PROJECT REPORT. 2013. Available from <http://pharmaceuticals.gov.in/pdf/PTUAS10052013.pdf> (accessed Aug 17, 2017).
- 25 Deloitte and the Confederation of Indian Industry. Annexure. In: CII - Deloitte Report on Cost of Compliance in Manufacturing. Available from https://www2.deloitte.com/content/dam/Deloitte/in/Documents/manufacturing/cost_of_compliance_in_manufacturing.pdf (accessed 17 Aug 2017).