**Supplementary Table 1: Calculation of required daily water amounts for BMS preparation and use**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Description** | **Type of water** | **Need to boil (yes or no)** | **Amount of water required per feed (mL)** | **Total amount required (mL) (for an average of 6.5 feeds per day)** |
| **Low estimate of daily required water for breast milk substitute preparation** |
| Water to reconstitute powdered breast milk substitute | Bottled | Yes | 104 | 675 |
| Water to wash feeding bottle and teat | Tap | No | 850 | 5525 |
| Water to sterilize feeding bottle with teat in a cooking pot estimated at 1 L total with one daily change equating to 2 L per day total which in turn equates to 308 mL per feed.  | Tap | Yes | 308 | 2000 |
| Water for caregiver to wash their hands prior to preparing the breast milk substitute | Tap | No | 350 | 2275 |
| Water for cooling the prepared bottle estimated at 625 mL total with one daily change equating to 1250 mL per day total which in turn equates to 192 mL per feed.  | Tap | No | 192 | 1250 |
| Water for caregiver to wash their hands prior to feeding the infant | Tap | No | 350 | 2275 |
| Water to clean the preparation surfaces after feeding the infant | Tap | No | 250 | 1625 |
| Total bottled water required (daily) (mL) | 675 |
| Total bottled water required (for six months) (mL) | 122850 |
| Total tap water required (daily) (mL) | 14950 |
| Total tap water required (for six months) (mL) | 2720900 |
| Total amount of water requiring boiling (daily) (mL) | 2675 |
| Total amount of water requiring boiling (for six months) (mL) | 486850 |
| **Mid estimate of daily required water for breast milk substitute preparation** |
| Water to reconstitute powdered breast milk substitute | Bottled | Yes | 104 | 675 |
| Water to wash feeding bottle and teat | Tap | No | 850 | 5525 |
| Water to sterilize feeding bottle with teat in a cooking pot estimated at 1 L total with one daily change equating to 2 L per day total which in turn equates to 308 mL per feed.  | Tap | Yes | 308 | 2000 |
| Water for caregiver to wash their hands prior to preparing the breast milk substitute | Tap | No | 350 | 2275 |
| Water for caregiver to wash their hands following the preparation of the breast milk substitute | Tap | No | 350 | 2275 |
| Water for cooling the prepared bottle estimated at 625 mL total with one daily change equating to 1250 mL per day total which in turn equates to 192 mL per feed.  | Tap | No | 192 | 1250 |
| Water for caregiver to wash their hands prior to feeding the infant | Tap | No | 350 | 2275 |
| Total bottled water required (daily) (mL) | 675 |
| Total bottled water required (for six months) (mL) | 122850 |
| Total tap water required (daily) (mL) | 17225 |
| Total tap water required (for six months) (mL) | 3134950 |
| Total amount of water requiring boiling (daily) (mL) | 2675 |
| Total amount of water requiring boiling (for six months) (mL) | 486850 |
| **High estimate of daily required water for breast milk substitute preparation** |
| Total amount of daily required water for all preparation activities per feed according to Gribble and Berry, 2011 (8) | Bottled | Yes | 3000  | 19500 |
| Total bottled water required (daily) (mL) | 19500 |
| Total bottled water required (for six months) (mL) | 3549000 |
| Total amount of water requiring boiling (daily) (mL) | 19500 |
| Total amount of water requiring boiling (for six months) (mL) | 3549000 |

**Supplementary Table 2: Upper and lower bound parameters for one Internally Displaced Infant for 6 months in Indonesia**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item** | **Lower or Upper Bound**  | **Total Units** | **Unit Cost (2021 USD)**  | **% of use attributed to program**  | **Total Cost (2021 USD)** |
| **Study arm 1: Exclusive breastfeeding for 6 months** |
| Salary costs for CHW to provide lactation consultation sessions to the caregiver (four to six 30-minute consultations) | Lower Bound  | 2 hours | $5.34 per hour  | 100% |  $10.68  |
| Upper Bound  | 3 hours |  $16.02  |
| Additional water for lactating caregiver | Lower Bound  | 127.4 liters | $0.28 per 1.5 liter bottle | 100% |  $23.78  |
| Upper Bound  | $0.70 per 1.5 liter bottle |  $59.45  |
| Additional food for lactating caregiver | Lower Bound  | 182 days  | $0.06 per day | 100% |  $10.92  |
| Upper Bound  | $0.15 per day |  $27.30  |
| Mastitis treatment | Lower Bound  | 0.1 episodes | $2.67 per episodic treatment | 100% |  $0.27  |
| Upper Bound  | 0.3 episodes  |  $0.80  |
| Diarrheal disease treatment | Lower Bound  | 0.51 episodes | $8.90 per episodic treatment | 100% |  $4.54  |
| Upper Bound  | 0.63 episodes |  $5.61  |
| ARI treatment | Lower Bound  | 3.53 episodes | $18.14 per episodic treatment  | 100% |  $64.03  |
| Upper Bound  | 4.41 episodes |  $80.00  |
| Lower Bound Total Study arm 1 |  $114.22  |
| Higher Bound Total Study arm 1 |  $189.18  |
| Basic preparation materials | Lower Bound  | 1 set | $31.06 per set | 100% |  $31.06  |
| Upper Bound  | $45.06 per set |  $45.06  |
| Feeding bottles | Lower Bound  | 2 bottles  | $1.92 per bottle | 100% |  $3.84  |
| Upper Bound  | $7.17 per bottle  |  $14.34  |
| Gas stove | Lower Bound  | 1 stove  | $33.87 per stove | 10% |  $3.39  |
| Upper Bound  | $56.45 per stove |  $5.65  |
| Salary costs for CHW to provide training session on how to correctly prepare and use BMS to caregiver. | N/A | 0.5 hours  | $5.34 per hour | 100% |  $2.67  |
| Formula tin (900g) | Lower Bound  | 52 tins | $5.12 per tin | 100% |  $266.24  |
| Upper Bound  | $22.61 per tin |  $1,175.72  |
| Bottled water | Lower Bound  | 123 liters | $0.28 per 1.5 liter bottle | 100% |  $22.96  |
| Upper Bound  | 3549 liters | $0.70 per 1.5 liter bottle |  $1,656.20  |
| Tap water | Lower Bound  | 2721 liters | $0.07 per cubic meter | 100% |  $0.19  |
| Upper Bound  | 0 liters | $0.07 per cubic meter |  $0.00  |
| Liquid petroleum gas | Lower Bound  | 22 kilograms | $0.31 per kilogram | 100% |  $6.82  |
| Upper Bound  | 160 kilograms |  $49.60  |
| Diarrheal disease treatment | Lower Bound  | 1.39 episodes | $8.90 per episodic treatment | 100% |  $12.37  |
| Upper Bound  | 1.70 episodes |  $15.13  |
| ARI treatment | Lower Bound  | 5.19 episodes | $18.14 per episodic treatment  | 100% |  $94.15  |
| Upper Bound  | 6.48 episodes |  $117.55  |
| Lower Bound Total Study arm 1 |  $443.69  |
| Higher Bound Total Study arm 1 |  $3,081.91  |

**Supplementary Table 3: Upper and lower bound parameters for one Syrian Refugee Infant for 6 months in Jordan**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item** | **Lower or Upper Bound**  | **Total Units** | **Unit Cost (2021 USD)**  | **% of use attributed to program**  | **Total Cost (2021 USD)** |
| **Study arm 1: Exclusive breastfeeding for 6 months** |
| Salary costs for CHW to provide lactation consultation sessions to the caregiver (four to six 30-minute consultations) | Lower Bound  | 2 hours | $2.14 per hour | 100% |  $4.28  |
| Upper Bound  | 3 hours |  $6.42  |
| Additional water for lactating caregiver | Lower Bound  | 127.4 liters | $0.43 per 1.5 liter bottle | 100% |  $36.52  |
| Upper Bound  | $1.07 per 1.5 liter bottle |  $90.88  |
| Additional food for lactating caregiver | Lower Bound  | 182 days | $0.06 per day | 100% |  $10.92  |
| Upper Bound  | $0.15 per day |  $27.30  |
| Mastitis treatment | Lower Bound  | 0.1 episodes | $1.07 per episodic treatment | 100% |  $0.11  |
| Upper Bound  | 0.3 episodes |  $0.32  |
| Diarrheal disease treatment | Lower Bound  | 0.36 episodes | $9.26 per episodic treatment | 100% |  $3.33  |
| Upper Bound  | 0.45 episodes |  $4.17  |
| ARI treatment | Lower Bound  | 1.87 episodes | $41.54 per episodic treatment | 100% |  $77.68  |
| Upper Bound  | 3.16 episodes |  $131.27  |
| Lower Bound Total Study arm 1 |  $132.84  |
| Higher Bound Total Study arm 1 |  $260.35  |
| Basic preparation materials | Lower Bound  | 1 set | $35.20 per set | 100% |  $35.20  |
| Upper Bound  | $97.26 per set |  $97.26  |
| Feeding bottles | Lower Bound  | 2 bottles  | $11.72 per bottle | 100% |  $23.44  |
| Upper Bound  | $14.22 per bottle  |  $28.44  |
| Gas stove | Lower Bound  | 1 stove | $33.87 per stove | 10% |  $3.39  |
| Upper Bound  | $70.90 per stove |  $7.09  |
| Salary costs for CHW to provide training session on how to correctly prepare and use BMS to caregiver. | N/A | 0.5 hours  | $2.14 per hour | 100% |  $1.07  |
| Formula tin (900g) | Lower Bound  | 52 tins | $12.58 per tin | 100% |  $654.16  |
| Upper Bound  |  $16.20 per tin |  $842.40  |
| Bottled water | Lower Bound  | 123 liters | $0.43 per 1.5 liter bottle | 100% |  $35.26  |
| Upper Bound  | 3549 liters | $1.07 per 1.5 liter bottle |  $2,531.62  |
| Tap water | Lower Bound  | 2721 liters | $16.68 per cubic meter | 100% |  $45.39  |
| Upper Bound  | 0 liters | $0.07 per cubic meter |  $0.00 |
| Liquid petroleum gas | Lower Bound  | 22 kilograms | $0.80 per kilogram | 100%100% |  $17.60  |
| Upper Bound  | 160 kilograms |  $128.00  |
| Diarrheal disease treatment | Lower Bound  | 0.99 episodes | $9.26 per episodic treatment | 100% |  $9.17  |
| Upper Bound  | 1.2 episodes |  $11.11  |
| ARI treatment | Lower Bound  | 2.75 episodes | $41.54 per episodic treatment | 100% |  $114.24  |
| Upper Bound  | 4.65 episodes |  $193.16  |
| Lower Bound Total Study arm 1 |  $938.91  |
| Higher Bound Total Study arm 1 |  $3,840.15  |