

What Does it Cost to Treat a COVID-19 Patient in Kenya?

Key Messages

- Per patient COVID-19 case management costs in hospitals are substantial ranging from **KES 21,359** per day for asymptomatic patients, **KES 21,361** per day for patients with mild symptoms, **KES 24,705** for patients with severe disease and **KES 51,684** for critical COVID-19 patients in ICU's
- There is therefore an urgent need to develop a sustainable financing arrangement for COVID-19 for the country
- If these costs are passed on to patients to pay out of pocket, they will result in significant catastrophe and impoverishment
- It is imperative therefore for the country to develop a prepayment mechanism to provide financial risk protection to patients and households against the financial hardship that they will face if required to pay for COVID-19 case management costs out of pocket
- Per patient health system costs for COVID-19 case management are driven by PPE costs which accounts for approximately **65%** of total costs
- Interventions to reduce PPE costs will improve the affordability of COVID-19 case management
- **Home based care** for asymptomatic and mild COVID-19 patients is **9 times cheaper** to the health system compared to institutional care (hospitals or isolation centers)
- Institutional care is driven by PPE, accommodation & overhead (hotel) costs, and staff costs
- The cost savings from home care should however be weighed against feasibility of home-based care and resultant impact on health outcomes (for COVID-19 patients, and transmission risk)

Introduction

We costed the case management of COVID-19 patients from a health system perspective. We used a micro-costing approach, identifying all inputs required for clinical case management, their quantities and costs. We identified inputs and their quantities from the Kenya COVID-19 case management guidelines. We obtained input costs from a study of 24 healthcare facilities in Kenya, 1 health facility providing COVID-19 case management services, and market prices for selected inputs. Figure 1 outlines the unit costs we estimated.

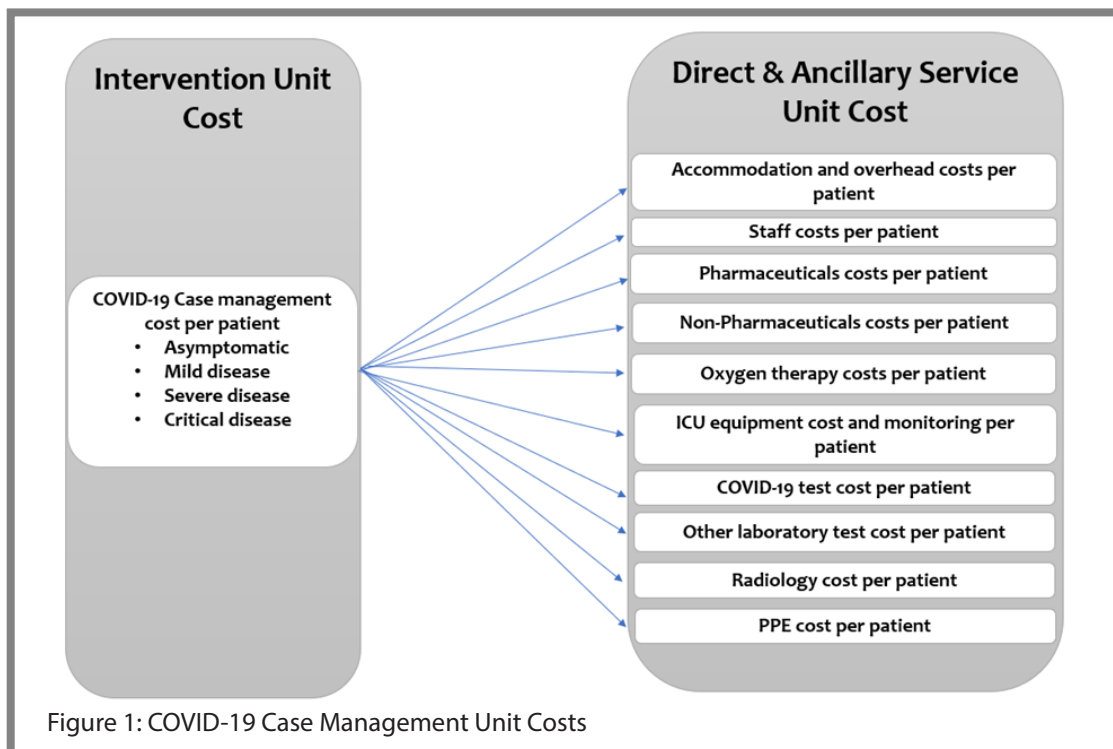


Figure 1: COVID-19 Case Management Unit Costs

Key Findings

COVID-19 patients that are asymptomatic or have mild disease

We costed two scenarios for patients with asymptomatic or mild COVID-19 disease. In the first scenario, we assumed that these patients will be managed in hospitals or isolation centers. This scenario incurs accommodation and overhead costs (hotel costs), staffing and personal protective equipment (PPE) costs that are comparable with severe forms of disease. Table, 1 & 2 outline the unit costs for these categories of patients.

Asymptomatic patients (hospital based/isolation center care)	Unit costs per case (KES)	Unit costs per case (USD)	Proportion
Accommodation + overheads	22,829.61	216.41	8.91%
Staff time	58,636.75	555.84	22.88%
Pharmaceuticals (Medicines etc)	0	0.00	0.00%
Non-pharmaceuticals (fluids, devices etc)	0	0.00	0.00%
COVID-19 test	5,449.85	51.66	2.13%
Other laboratory tests	0	0.00	0.00%
Radiology	2,961.70	28.08	1.16%
Personal protective equipment (PPE)	166,432.14	1577.68	64.93%
		0.00	
TOTAL Cost per patient	256,310.04	2,429.66	
Patient cost per day	21,359.17	202.47	

Table 1: Unit costs for asymptomatic patients managed in hospitals or isolation centers

COVID-19 patients with mild disease (hospital based/isolation center care)	Unit costs per case (KES)	Unit costs per case (USD)	Proportion
Accommodation + overheads	22,829.61	216.41	8.91%
Staff time	58,636.75	555.84	22.87%
Pharmaceuticals (Medicines etc)	30.24	0.29	0.01%
Non-pharmaceuticals (fluids, devices etc)	0	0.00	0.00%
COVID-19 test	5,449.85	51.66	2.13%
Other laboratory tests	0		0.00%
Radiology	2,961.70	28.08	1.16%
Personal protective equipment (PPE)	166,432.14	1577.68	64.93%
TOTAL Cost per patient	256,340.28	2,429.95	
Patient cost per day	21,361.69	202.50	

Table 2: Unit cost for mild COVID-19 patients managed in hospitals or isolation centers

In scenario 2, we assumed that patients that are asymptomatic or have mild COVID-19 will be treated at home in line with the WHO and Kenya home-based care guidelines. This scenario is approximately 9 times cheaper compared to the scenario where these patients are managed in a hospital or an isolation center because of cost-savings on accommodation and overhead costs, staff costs and PPE costs. Table 3 & 4 outlines the unit costs for this scenario.

Asymptomatic patients (home based care)	Unit costs per case (KES)	Unit costs per case (USD)	Proportion
Accommodation + overheads	1,000.00	9	3.41%
Staff time	1,047.08	10	3.57%
Pharmaceuticals (Medicines etc)	0	0	0.00%
Non-pharmaceuticals (fluids, devices etc)	0	0	0.00%
COVID-19 test	5,449.85	52	18.57%
Other laboratory tests	0	0	0.00%
Radiology	2,961.70	28	10.09%
Personal protective equipment (PPE)	18,856.04	179	64.26%
		0	
TOTAL Cost per patient	29,314.67	278	
Patient cost per day	2,442.89	23	

Table 3: Unit costs for asymptomatic COVID-19 patients managed at home

COVID-19 patients with mild disease (home based care)	Unit costs per case (KES)	Unit costs per case (USD)	Proportion
Accommodation + overheads	1,000.00	9.48	3.41%
Staff time	1,047.08	9.93	3.57%
Pharmaceuticals (Medicines etc)	30.24	0.29	0.10%
Non-pharmaceuticals (fluids, devices etc)	0	0.00	0.00%
COVID-19 test	5,449.85	51.66	18.57%
Other laboratory tests			0.00%
Radiology	2,961.70	28.08	10.09%
Personal protective equipment (PPE)	18,856.04	178.74	64.26%
TOTAL Cost per patient	29,344.91	278.17	
Patient cost per day	2,445.41	23.18	

Table 4: Unit costs for mild COVID-19 patients managed at home

Patients with severe and critical COVID-19 disease

We estimated unit costs for patients with severe COVID-19 disease and hence needing hospitalization in general hospital wards and oxygen therapy. We also estimated the unit costs for patients who develop critical COVID-19 disease and hence are hospitalized in ICU's with the option for mechanical ventilation. PPE is the main cost driver for per patient daily costs for COVID-19 case management accounting for approximately 65% of total costs. This is because of the expensive item costs for PPE and the need to change PPE several times in a day to protect health workers. Table 5 & 6 outlines the unit costs for these scenarios.

COVID-19 patients with severe disease	Unit costs per case (KES)	Unit costs per case (USD)	Proportion
Accommodation + overheads	22,829.61	216.41	7.70%
Staff time	74,701.19	708.12	25.20%
Pharmaceuticals (Medicines etc)	819.84	7.77	0.28%
Oxygen therapy	13,413.79	127.15	4.52%
Non-pharmaceuticals (fluids, devices etc)	2487.2	23.58	0.84%
COVID-19 test	5,449.85	51.66	1.84%
Other laboratory tests	9,395.77	89.07	3.17%
Radiology	2961.70	28.08	1.00%
Personal protective equipment (PPE)	187,236.16	1,774.88	63.16%
			7.70%
TOTAL Cost per patient	296,465.48	2,810.31	
Patient cost per day	24,705.46	234.19	

Table 5: Unit cost for patients with severe COVID-19 hospitalized in general hospital wards

COVID-19 patients with critical disease	Unit costs per case (KES)	Unit costs per case (USD)	Proportion
Accommodation + overheads	85,200.00	807.64	13.74%
Staff time	149,402.37	1,416.24	24.09%
Pharmaceuticals (Medicines etc)	29,686.48	281.41	4.79%
Oxygen therapy	15,676.79	148.61	2.53%
Non-pharmaceuticals (fluids, devices etc)	4,527.20	42.92	0.73%
COVID-19 test	5,449.85	51.66	0.88%
Other laboratory tests	9,395.77	89.07	1.51%
Radiology	2,961.70	28.08	0.48%
Personal protective equipment (PPE)	403,108.49	3,821.22	65.00%
Equipment and monitoring in ICU	34,480.13	326.85	5.56%
TOTAL Cost per patient	620,208.64	5,879.20	
Patient cost per day	51,684.05	489.93	

Table 6: Unit costs patients with Critical COVID-19 admitted in ICU's

Summary and Recommendations

- Per patient COVID-19 case management costs are substantial, requiring the development of a sustainable financing arrangement for COVID-19 for the country
- If these costs are passed on to patients to pay out of pocket, they will result in significant catastrophe and impoverishment
- There is therefore an urgent need to develop a prepayment mechanism to provide financial risk protection to patients and households against the financial hardship that they will face if required to pay for COVID-19 case management costs out of pocket
- Per patient health system cost for COVID-19 case management are driven by PPE cost which accounts for approximately 65% of total cost
- Interventions to reduce PPE cost will improve the affordability of COVID-19 case management
- Home based care for asymptomatic and mild COVID-19 patients is 9 times cheaper to the health system compared to institutional care (hospitals or isolation centers)
- Institutional care is driven by PPE, accommodation & overhead (hotel) costs, and staff costs
- The cost savings from home care should however be weighed against feasibility of home-based care and resultant impact on health outcomes (for COVID-19 patients, and transmission risk)

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