

AI-Driven PHC Supply Chain Optimization

Problem	Solution
<ul style="list-style-type: none">• 31% forecasting error leading to stockouts• Manual NHSRC compliance tracking (2+ hours daily)• No clinical priority in inventory decisions• Reactive vs proactive supply chain	<ul style="list-style-type: none">• AI forecasting: 31% → 12.8% MAPE• Automated NHSRC compliance with VED-FSN logic• Scenario simulation for resilience planning• 3-tier dashboard for different stakeholders

Architecture Diagram

Data → AI Decisions → Dashboard Actions

System Outputs

1. Actionable_alerts.json - Real-time escalation
2. Final_decision_matrix.csv - NHSRC decisions
3. Scenario_summary.csv - Risk assessment

- Executive view (KPI cards)
- Operational view (action table)



Scenario view (what-if analysis)

ClipboardDataQueriesInsertCalculationsSensitivityShare

NormalOutbreakDelayWorst

sku_id	sku_name	ved_category	fsn_category	NHSRC_Min_Days	adjusted_days_cover	adjusted_forecast	Adjusted_Final_Action	Adjusted_Final_Action_Priority	Adjuste
MED004	Ibuprofen Tablet 200mg	Essential	Fast	10	2.56	999.86	EMERGENCY REPLENISH (Essential) - ESCALATE	1	CRITICA
MED002	Amoxicillin Capsule 250mg	Vital	Fast	14	1.07	1,318.00	EMERGENCY REPLENISH (Vital) - ESCALATE	1	CRITICA
MED003	Oral Rehydration Salts	Vital	Fast	14	5.45	1,062.60	EMERGENCY REPLENISH (Vital) - ESCALATE	1	CRITICA
MED001	Paracetamol Tablet 500mg	Vital	Fast	14	1.04	1,550.27	EMERGENCY REPLENISH (Vital) - ESCALATE	1	CRITICA
MED010	Multivitamin Tablet	Desirable	Slow	7	3.11	179.86	EMERGENCY REPLENISH (Desirable) - ESCALATE	1	CRITICA
MED009	Metformin Tablet 500mg	Essential	Slow	10	2.98	371.46	EMERGENCY REPLENISH (Essential) - ESCALATE	1	CRITICA
MED008	Omeprazole Capsule 20mg	Essential	Slow	10	1.50	232.81	EMERGENCY REPLENISH (Essential) - ESCALATE	1	CRITICA
MED007	Adrenaline Injection 1 mg/ml	Vital	Slow	14	5.75	56.00	EMERGENCY REPLENISH (Vital) - ESCALATE	1	CRITICA
MED006	Insulin Injection 40 IU/ml	Vital	Slow	14	7.33	122.20	URGENT REORDER (Vital) - PHARMACIST ACTION	2	HIGH RI
MED005	Cetirizine Tablet 5mg	Essential	Fast	10	8.66	724.00	REORDER SOON (Essential) - WEEKLY PROCUREMENT	3	MODER
MED012	Cotton Roll 100g	Desirable	Fast	7	24.47	270.00	ADEQUATE STOCK (STABLE) - NO ACTION	5	STABLE
MED011	Antiseptic Lotion	Desirable	Slow	7	10.74	76.92	ADEQUATE STOCK (STABLE) - NO ACTION	5	STABLE

Scenario

☐ Base☐ Outbreak☐ Supply_Delay☐ Worst_Case

2 additional items become non-compliant

Scenario_Impact_Summary

7

Critical_Items_Increase

Visualizations

Build visual

Filters

Bookmarks

Values

Add data fields here

Drill through

Cross-report

Keep all filters

Add drill-through fields here

Data

Search

actionable_alerts

expiry_summary

batch_count

Critical Expiry B...

expiry_risk_buc...

financial_risk

financial_risk_pct

on_hand

price_per_unit

sku_count

final_decision_matrix

fsn_summary

medicine_master

model_performance_b...

replenishment_recom...

scenario_summary

Scenario_Table

sku_level_features

system_alerts

ved_summary

Impact Metrics

- Stockout risk reduction: 34%
- Decision time: 48h → 4h (92% faster)
- NHSRC compliance: Automated → 100% coverage
- Critical items availability: 82% → 98.2%