

Motorcycle-based Ambulances (MBA)

Ron Dennis

Developing Technologies



Transport/Ambulance options

Requirements

- Carry patient on stretcher in reclined or semi-reclined position
- Carry a carer
- Reach a health facility within 2 hours
- Provide a comfortable ride

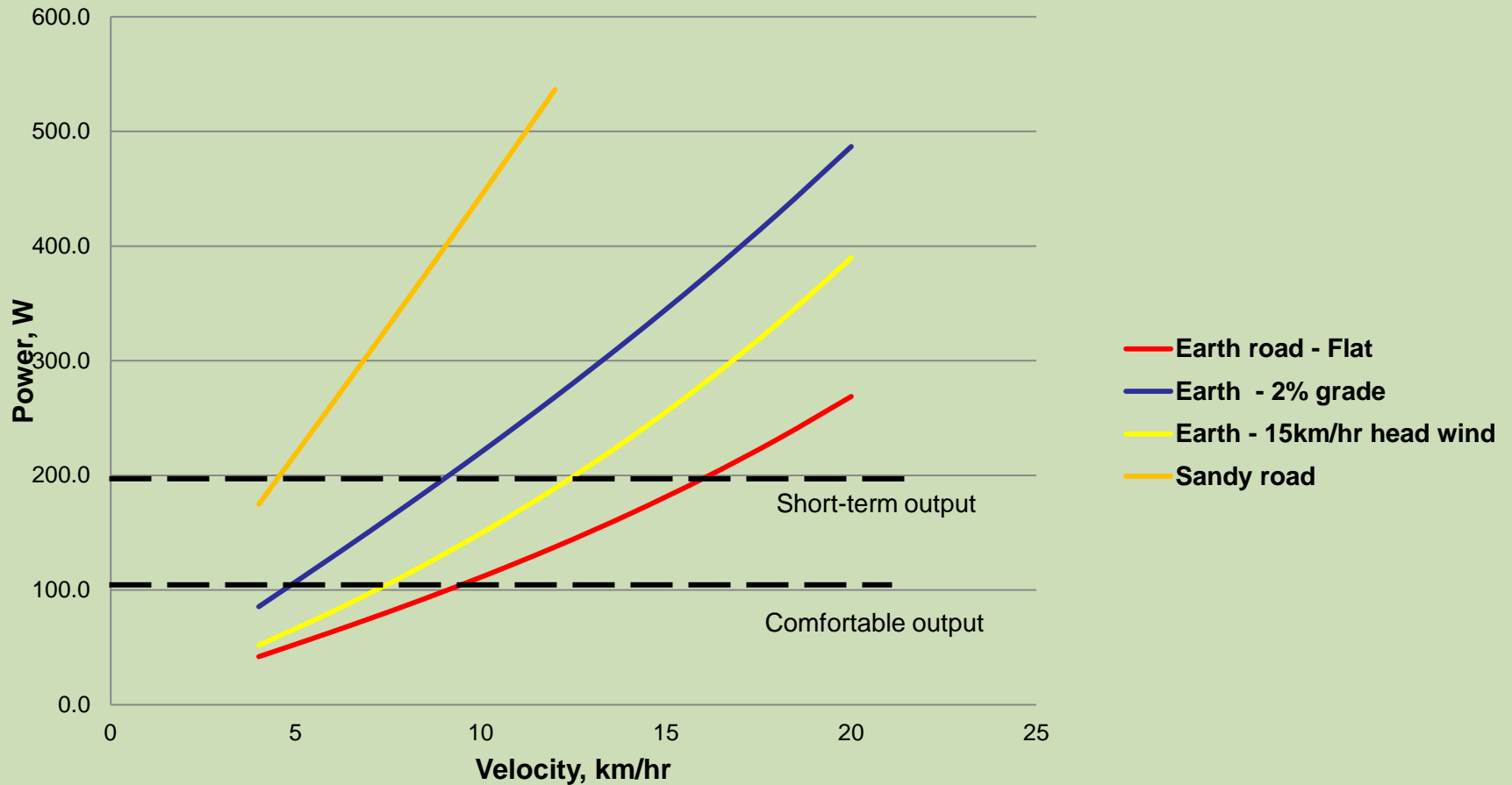
Options

Basic	Walk with stretcher Handcart Animal-based
Intermediate	Bicycle ambulance Motorcycle-based (MBA) – sidecar; trailer; 3-wheeler
Conventional	Adapted pick-up or minibus Landcruiser

Bicycle ambulance



Power needed to tow a bicycle ambulance



Motorcycle sidecar-ambulance



Motorcycle Ambulance Trailer(MAT)



MAT used as people carrier



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Comparison of main features of MBA

Feature	Sidecar	Trailer
Access	<ul style="list-style-type: none"> • Minimum track width 1.5m • Generally good access – possible problems on sand 	<ul style="list-style-type: none"> • Minimum track width 1.5m • Some problems on slippery surfaces due to extra grip needed
Stability, control, safety	More stable and easier to control	Rider needs to build up experience for confident control. No safety problems in over 25,000km of operation in trials
Capacity	Carer rides on motorcycle pillion seat – less support for patient	Carer rides with patient to provide direct support
Supply	Less suited to local manufacture – at present imported from SA with extra freight cost	Locally manufactured from readily available materials. Any motorcycle can be used
Maintenance	The sidecar puts additional loads on the motorcycle, increasing maintenance costs, particularly of wheels Since they are an integral unit availability of spare parts may be a problem until numbers are large enough to support local stocking of parts	Use of any motorcycle, 125cc or larger, and local manufacture of MAT means maintenance and availability of spare parts are not a problem
Flexibility	Dedicated use	Motorcycle easily unhitched for other use

Cost comparison (Costs in US\$)

Ambulance Type	Initial cost	Running costs/km				Depreciat'n /km (1)	Total operating cost/km
		Fuel used km/l	Fuel cost/km	Repair and maint'ce	Total/km		
Landcruiser	60,000	6.5	0.26	0.32	0.58	0.26	0.84
MAT with 125cc m/c	5,500	30	0.055	0.12	0.175	0.08	0.29
eRanger (2)	6,000 (3)	17	0.10	0.17	0.27	0.08	0.38
Bicycle ambulance with bicycle	700	0	0	0.016	0.016	0.16	0.18

(1) Depreciation assumptions

(i) Landcruiser - 25,000km/yr and total life 300,000km

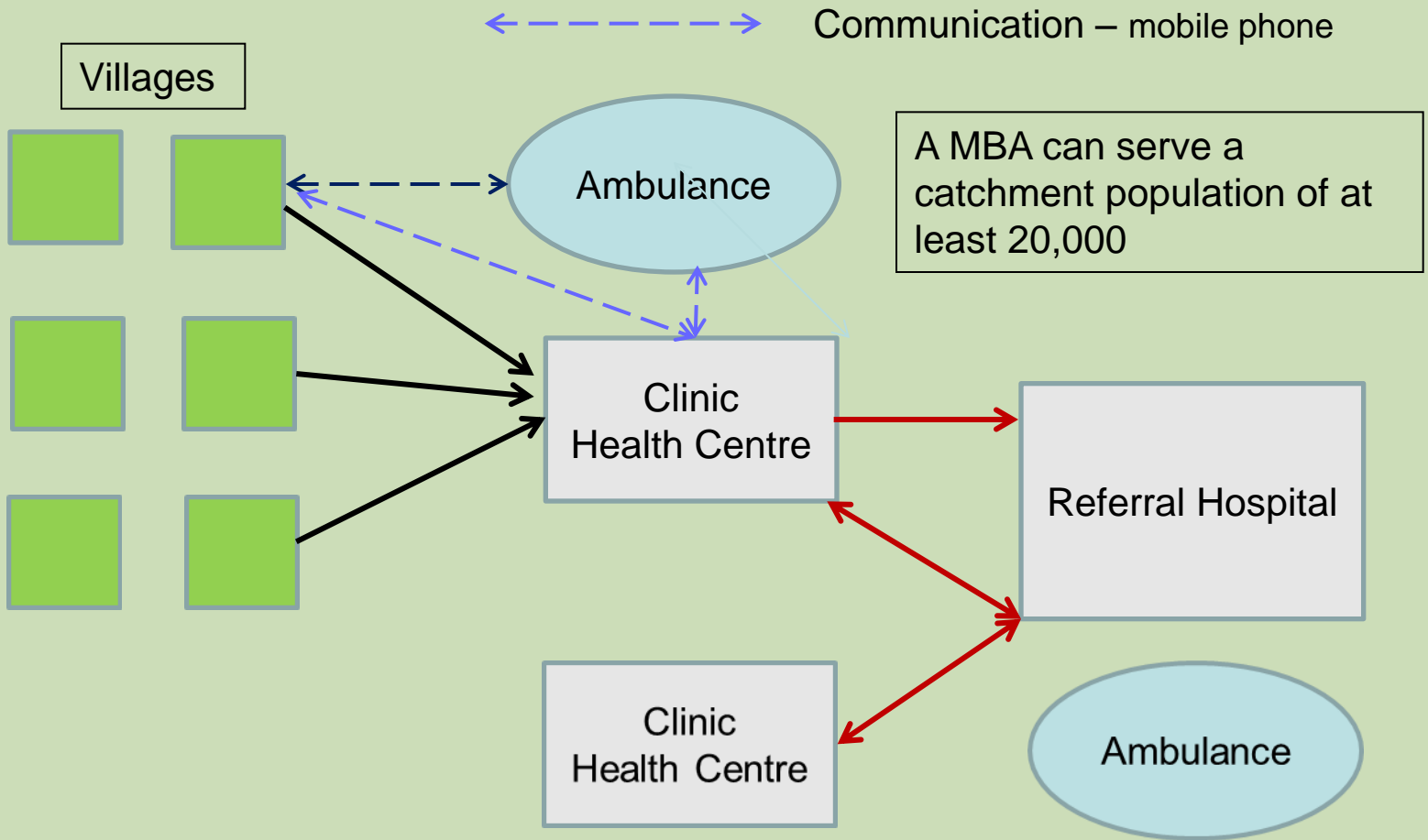
(ii) MAT and eRanger – 10,000km/yr and total life 80,000km

(iii) Bicycle ambulance – 500km/yr and total life 4000km

(2) From project in Malawi

(3) May be extra freight cost

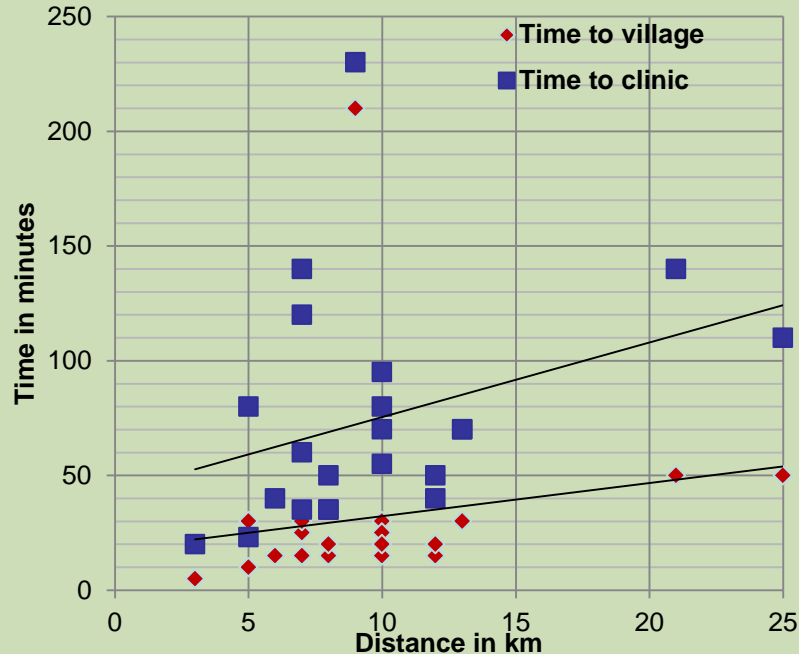
Operation of Emergency Transport Service



Summary of results of AFCAP project in Zambia

Total trips	Total km	Breakdown of trips in %			
		Maternity	Malaria	Other	Accident
383	15,500	65.7	18.5	15.0	0.8

Timing of trips



Computer image of MAT Mk II



Acknowledgements

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