

TRB EMS Subcommittee ANB10(5)

EMS Safety Summit 2012 Safety Systems, Strategies and Solutions

Alternative Vehicles: Motorcycles in EMS

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Motorcycles in EMS

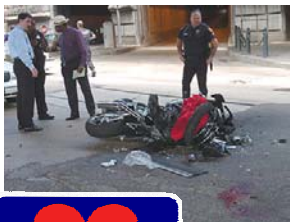
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Motorcycles in EMS



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The Motorcycle Medic





Paramedic Motorcycle



Offered on e-bay
(free shipping in UK!)

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Motorcycle EMS (not new!)

- Around since the early 1900s
- Used commonly in WWI



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Motorcycle EMS (not new!)

- Resurgence in interest isn't new
 - Hong Kong (since at least 1990)
 - United Kingdom (since 1990)
 - Singapore (since 1992)

And its use is widespread.....



Mar 23, 2009

The London Ambulance Service's has expanded it's motorcycle paramedic fleet with 12 Honda Pan European motorcycles

ARCH BOARD

Utrecht Netherlands



DARD

Japan

- Japanese fire depts use off-road motorcycles as emergency vehicles



http://en.wikipedia.org/wiki/Motorcycle_ambulance

Sao Paulo Brazil

- Deployed in two-man teams
 - the lead vehicle carrying a first aid kit & IV fluids
 - the rear vehicle carries more advanced equipment
- Hundreds more bikes ordered recently



http://en.wikipedia.org/wiki/Motorcycle_ambulance

Hong Kong Paramedic Motorcycle



From 15 (in 2000) to 35 paramedic motorcycles (2008)



Australia

- “Response times as little as **3.5 mins** vs **8 mins** for ambulances”
- “The ave response time for a motorcycle crew was **3 minutes**, well below standard crew average of **10 mins**”



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Miami

- Results
 - 1,300 dispatched calls
 - for immediate life threatening calls **< 3 min response time** (vs **6 - 8 mins** with ambulance)



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<http://www.emsresponder.com/article/article.jsp?id=3978&siteSection=1>

Nantucket's Special Ops Motor Medics



Motor Medic



Motor Medic

The Motor Medics are located at key downtown districts
Population goes from 6,000 to >60,000 in the summer

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<http://www.massfiretrucks.com/MASS%20N.htm>

Motorcycle Special Events Team

- Volunteers supporting community events, providing on route emergency care & communications.



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<http://www.mset-tx.org>

Motorcycle Special Events Team

- A registered First Responder Org
- State certified & credentialed providers
- Medical Direction under the Austin/Travis County EMS System



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<http://www.mset-tx.org>

Motorcycle Special Events Team



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Faster Response Times?

- What is the published evidence?



Singapore Study

- Simultaneous dispatch - Ambulances average **4.96 mins** longer than motorcycles ($p < 0.001$, 95% CI 2.61-7.31)

Marcus Ong, Yiong Huak Chan, Venkataraman Anantharaman. Improved Response Times with Motorcycle Based Fast Response Paramedics in an Urban Setting. SGH PROCEEDINGS. 2003;2(3): 214-219.

Response Times

- In a congested urban setting (Taiwan)
 - Motorcycles simultaneously dispatched with an ambulance arrived on scene **1.4 minutes** sooner during rush hour and **0.9 minutes** faster in non-rush hour traffic

Lin CS, Chang H, Shyu KG, Liu CY, Lin CC, Hung CR, Chen PH. A method to reduce response times in prehospital care: the motorcycle experience. Am J Emerg Med 1998;16:711-713

Response Times

- In Portugal
 - **63%** of cases of simultaneous dispatch resulted in the motorcycle arriving **before** the ambulance

Soares-Oliveira M, Egipto P, Costa I, Cunha-Ribiero LM. Emergency motorcycle: has it a place in a medical emergency system? Am J Emerg Med 2007;6:620-622.

Response Times

- A Dutch study
 - found a **2 minutes faster** response time for motorcycles distances up to 7 kilometers

Veen AA van der, Zwakhals SLN, Hazelzet-Krans B, Manen JW van. Niet zonder zorg, een onderzoek naar de doelmatigheid en kwaliteit van de ambulancezorg. RIVM rapport (Not without care, a study of efficiency and quality ambulance care. RIVM Report) 270556002 2001.

Response Times

Does it matter?

Norwegian Study

- In Oslo 3 patients were resuscitated by the motorcycle responders prior to the arrival of the ambulance and 2 achieved ROSC

Nakstad AR, Bjelland B, Sandberg M. Medical emergency motorcycle – is it useful in a Scandinavian Emergency Medical Service? Scand J Trauma Resusc Emerg Med. 2009 17(1):9 <http://www.sjtreem.com/content/17/1/9>



Outcomes

- To date few studies have addressed and most are seriously underpowered
- Most focus on response times

But wait there is more....



You Call – We Haul



This needs to stop

Non Transports

- City of Akron in 2011 had a 30% (8783/28,853) non-transport rate (refusals, medics initiated non-transport, DOA etc)



Assessment

- In unclear calls/invalid assists or those felt unlikely to need an ambulance the Motorcycle Medic can assess **without tying up an ambulance**



Ambulance Sparing

- In Oslo
 - 1/3 of all motorcycle dispatches were specifically dispatched to clarify the need for transport
 - another 1/3 was dispatched as the closest available unit.

Nakstad AR, Bjelland B, Sandberg M. Medical emergency motorcycle – is it useful in a Scandinavian Emergency Medical Service? Scand J Trauma Resusc Emerg Med. 2009 17(1):9



Ambulance Sparing

- In almost ¼ (23.5%) of all motorcycle missions ambulance use was avoided!

Nakstad AR, Bjelland B, Sandberg M. Medical emergency motorcycle – is it useful in a Scandinavian Emergency Medical Service? Scand J Trauma Resusc Emerg Med. 2009 17(1):9



Treat and Release

- Lin (Taiwan) had a **32% non-transport rate**
 - but the ambulance was dispatched along with the motorcycle and was therefore always readily available for transport

Lin CS, Chang H, Shyu KG, Liu CY, Lin CC, Hung CR, Chen PH. A method to reduce response times in prehospital care: the motorcycle experience. Am J Emerg Med 1998;16:711-713



Treat and Release

- In Portugal 18% of motorcycle medic cases the patient were not transported

Soares-Oliveira M, Egípto P, Costa I, Cunha Ribiero LM. Emergency motorcycle: has it a place in a medical emergency system? Am J Emerg Med 2007;6:620-622.



Dutch Study

- 1842 total emergency dispatches:
 - 1664 were primary dispatches
 - 468 by the motorcycle (often roaming)
 - 1196 by ambulance (in station mostly)
 - 178 in response to requests for assistance by the originally dispatched unit

Van der Pol H, Menel F, de Vos R. The Impact of an Emergency Motorcycle Response Vehicle on Prehospital Care in an Urban Area. Eur J Emerg Med 2011 18(6):328-333.



Transport & Treat and Release

	TRANSPORTED	REFERRED TO HOSPITAL BY OWN MEANS
MOTORCYCLE	40%	9%
AMBULANCE	72%	1%

Remainder were released



Treat and Release

- More likely to occur when the motorcycle medic responded irrespective of complaint!
- Except the elderly – they were more likely to be transported irrespective of response mode



Emergency Call

- In the first few minutes you don't usually need



Emergency Call

- The maximum response option is usually unnecessary, frequently dangerous and always costly



Emergency Call

- But you do need



- Can be delivered by a motorcycle medic

What About?

- Additional uses:
 - Locked in/lonely (freq callers)
 - Invalid assists
 - Nontransports and refusals
- Excellent PR and good QA

Take Home Points

- They are fast, highly mobile and may make a difference when response times matter

Take Home Points

- Provide a highly mobile and rapid extra set of hands for back up to ambulance crews

Take Home Points

- Motorcycles provide **more response options** for less than adding another ambulance!
- And provide follow-up options as well



**And If
Motorcycles
Make
you
Nervous**

The future?

Rural Patient Transport Device – AmbiCycle™



US Patent Pending Jan 09
Dr. Mark E. Benden CPE
Dr. Eric Wilke