DISPATCH UPDATE

A tentative review of dispatch process: Man or Machine ?

Michel Baer

The main issue of dispatch is not Paramedic dispatch versus Doctor dispatch

→ …The main issue may be Doctor versus Machine

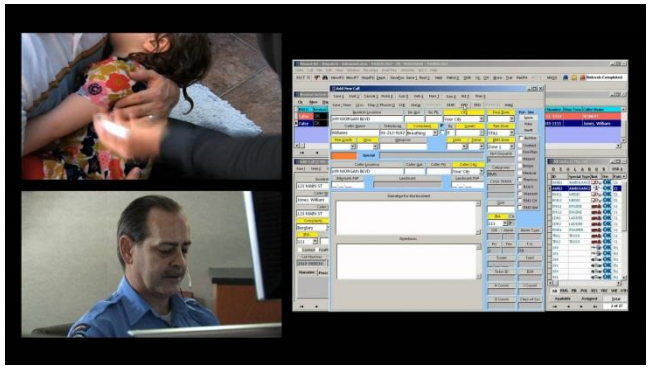
Evaluation of:

- Dispatch by doctors
- Advanced Medical Priority Dispatch Systems

Triage and/or diagnostic Apps

IT tools

AMPDS are software used to dispatch appropriate aid to medical emergencies including systematized caller interrogation and pre-arrival instructions.
Closed questionnaires
Prioritization codes
Dispatch and response determinants



AMPDS better than "free dispatch" ?
Is "time to patient" a pertinent indicator
Evaluation of AMPDS: Identify ACS, Stroke, CA..
Evaluation of doctors' dispatch

Evaluation of triage/diagnostic Apps on smartphones
Information Technology

AMPDS better than "free dispatch"

<u>UK began implementing AMPDS in the early 2000.</u>

- The operators (EMD) felt that "open questionnaires" provide better results through a better understanding than « closed questionnaires » by the way of 2 hypothesis:
  - Call flexibility
  - Better adaptation to caller

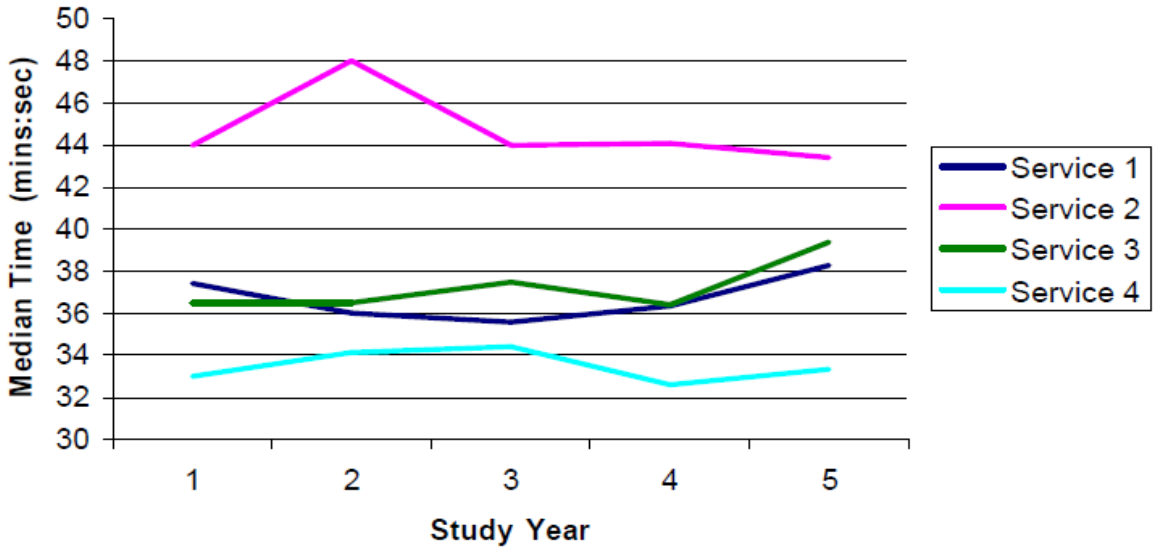
- Comparison of outcomes before and after implementation of AMPDS, performed by EMD
  - Cardiac arrests in 1999 & 2002
  - ➢ Rate of True Diagnostic increases 200%

(Heward, Emerg Med J, 2004)

Is "time to patient" a pertinent indicator

- NO
  - Response time performance, usually Time to patient, Time of call, Time to definitive right care?
- Unless cardiac arrest, time is not an significant criteria unless under 4mn.
- No change in the median time to the definitive care over the five year period study

Figure 4.4 **Median time to definitive care over 5 years**



(J. Turner report 2006)

Evaluation of AMPDS: Identify ACS

Ability to identify and directly dispatch ACS to cath-lab or ICU:

Results: In total, 42 657 emergency calls were made to HAST from the Southampton area. Of these, 263 patients were subsequently diagnosed in hospital as having an ACS. Of these 263 patients, 76 presented without chest pain. Sensitivity of AMPDS for detecting ACS in this sample was 71.1% and specificity 92.5%. Positive predictive value was 5.6% (95% confidence interval 4.8 to 6.4%), and 12.5% (33/263) of patients with confirmed ACS were classified as non-life threatening (category B) incidents.

- AMPDS with DH call prioritization is not a tool designed for clinical diagnosis, and its extension into this field does not enable accurate identification of patients with ACS

Deakin CD[1], Emerg Med J. 2006 Mar;23(3):232-5

Evaluation of AMPDS: Identify acute stroke

Ability to identify, and directly admit patient in a stroke unit:

4810 patients were admitted to NHH during the study period. Of these, 126 patients were subsequently diagnosed as having had a stroke.

- Fewer than half of all patients with acute stroke were identified using telephone triage on the initial emergency call to the ambulance service. Less than one quarter received the highest priority of ambulance response.

Deakin CD[1], Emerg Med J. 2009 Jun;26(6):442-5.

Evaluation of AMPDS: Identify Cardiac Arrest

Ability to identify, advice T-CPR and send ambulance:

All '999' emergency calls to South Central Ambulance Service (SCAS) over a 12-month period screened by NHS Pathways v9.04 were identified. A total of 469 400 emergency (999) calls

Of the 3119 CA identified by ambulance crew, 753 were not initially classified (at dispatch) as CA (24.1%).

- It accurately identifies 75.9% of adult CAs. The remainder represents approximately 7500 treatable CAs in the UK annually where the diagnosis is missed

Deakin CD[1], Heart. 2016 Dec 23. pii: heartjnl-2016-310651

Evaluation of doctors' dispatch

Added value of a dispatching doctor

SAMU answer all emergency calls, whatever the level of emergency, from cardiac arrest, to non-urgent GP"s visit.

The dispatching doctor decides:

- A supposed diagnostic
- The type of response

Study concerns 4 "dispatch models":

- Medical advice/self-treatment
- Consultation to GP
- BLS ambulance
- ALS ambulance

➢ The only robust validated model is "ALS" ambulance

Medical coordination-like decisional process.
Huber, Goldstein JEUR 2000

Prospective study performed in 2004 / 2005, comparing diagnostic made by dispatch doctor,and final diagnostic at hospital

Supposed dg, and level of confidence collected at dispatch

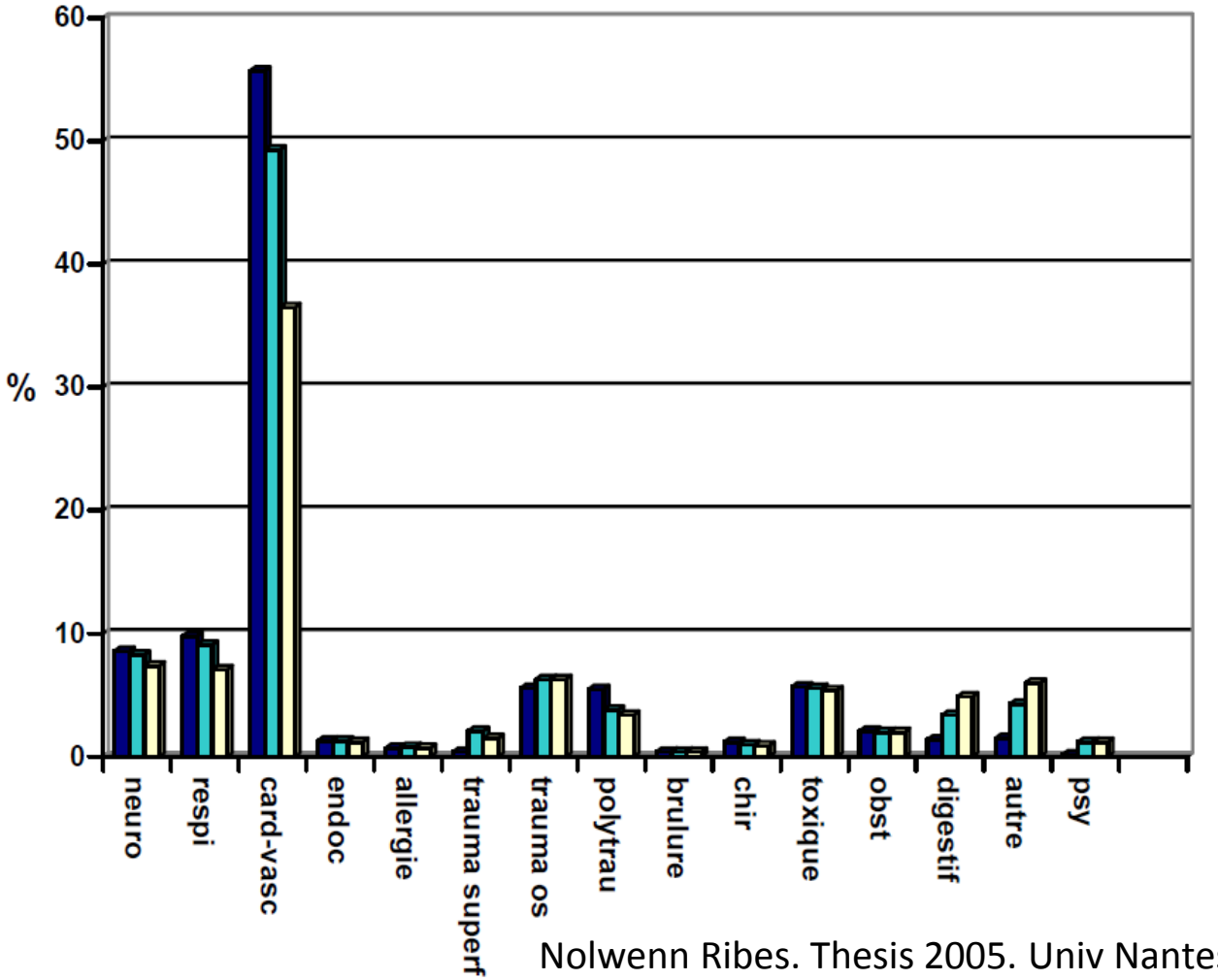
Verified dg collected at hospital discharge

1292 ALS files

Dispatch Dr.

ALS ambulce Dr.

Hospital Dr.



Nolwenn Ribes. Thesis 2005. Univ Nantes

Discussion on "Machine, Dispatcher and Doctor"

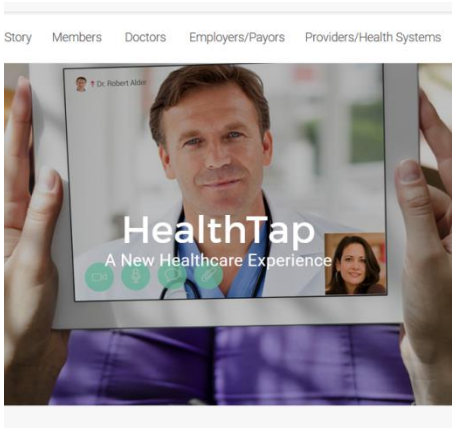
- "EMD-AMPDS" is better than "EMD alone" at least in CA.
- Limits of the studies: Same author, non homogenous DATA, different registries
- Doctors at dispatch provide adequate triage, with cardio-vascular overtriage

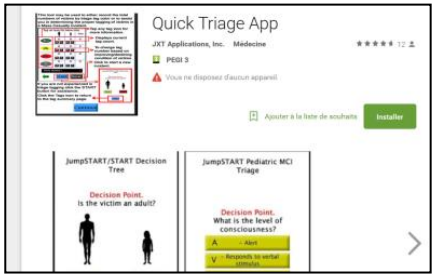
Evaluation of triage/diagnostic Apps

Are they evaluated?

Are they relevant?

Which accuracy ?





Are Smartphones' Applications Clinically Relevant

The iTunes App Store contains approximately 20,000 apps in its "Medical" category

Review finds 7,699 apps from the 21 search terms (ie “emergency medicine”, “critical care”, “procedures”)
Two physicians independently classify these applications in 5 categories.

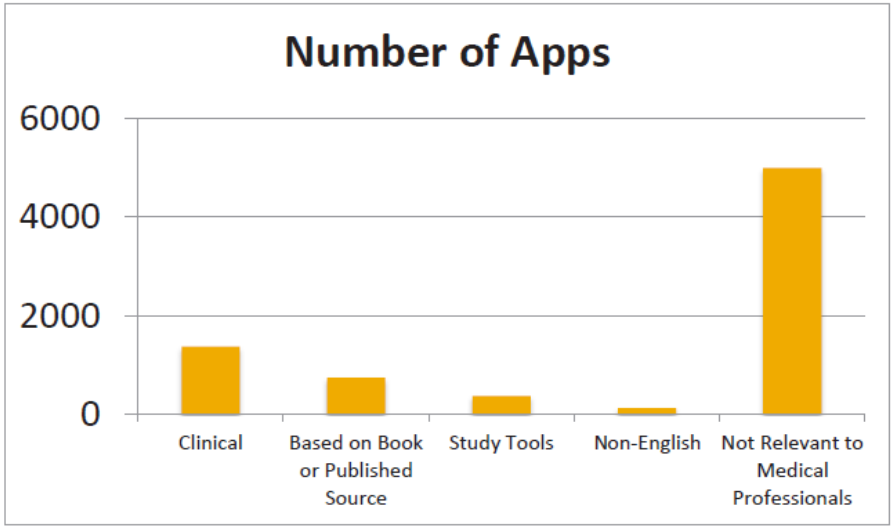


Figure. Number of applications divided into categories

Results:

- 64.9% were considered not relevant
- 6.9% of the App Store’s “Medical” Category is relevant

Warren Wiechmann, West J Emerg Med. 2016 Mar; 17(2): 191–194.

Review of the literature to assess … quality … and outcomes supporting the use of apps …

Search in PubMed and MEDLINE, EMBASE, the Cochrane Central Register of Controlled Trials, Web of Science, and the NTIS Bibliographic Database published from 2008 to 2015.
175 studies
Populations targeted by apps included obesity, physical handicaps, diabetes, older age, and dementia

- Only 30.3% (53/175) of the apps studied were identifiable and available to the public through app stores.
- Studies were small (median number of participants=31)
- Only 36 studies (20.6%, 36/175) evaluated a clinical outcome

Karandeep Singh, JMIR Mhealth Uhealth. 2016 Oct-Dec; 4(4):

Study 23 Apps featuring Diagnostic or Triage

45 standardized patient vignettes were compiled and equally divided into 3 categories of triage:

emergency care required (ALS)
non-emergency care reasonable (BLS)
self-care reasonable (Medical advice)

Dg Apps : Main outcomes were the correct diagnosis first or within the first 20 potential diagnoses (n=770 standardized patient evaluations)

Triage Apps: Main outcomes were whether the App correctly recommended one of the 3 above responses (n=532 standardized patient evaluations).

Hannah L Semigran, BMJ 2015;351:h3480

- Results:

Correct Dg first :	34% [31% to 37%]
Mean Appropriate triage advice :	57% [52% to 61%]
Appropriate triage advice depending on category:	
Emergency cases:	80% [75% to 86%]
Non-emergency cases:	55% [47% to 63%]
Self-care cases:	33% [26% to 40%]

$p < 0.001$

Hannah L Semigran, BMJ 2015;351:h3480

Information Technology

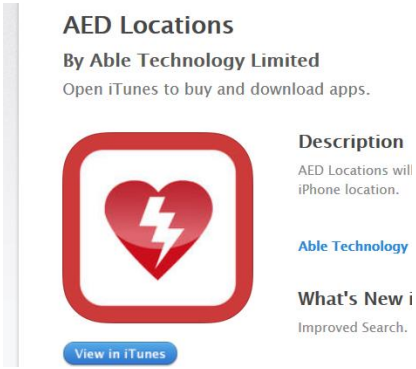
Life saving Apps rarely assessed:

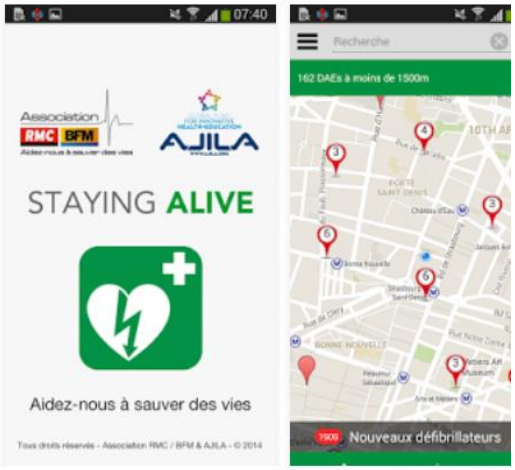
- CPR training
- Public access AED localization
- Some app deleted

This app was removed from the App Store.

Philips HeartStart

iOS iPad Medical





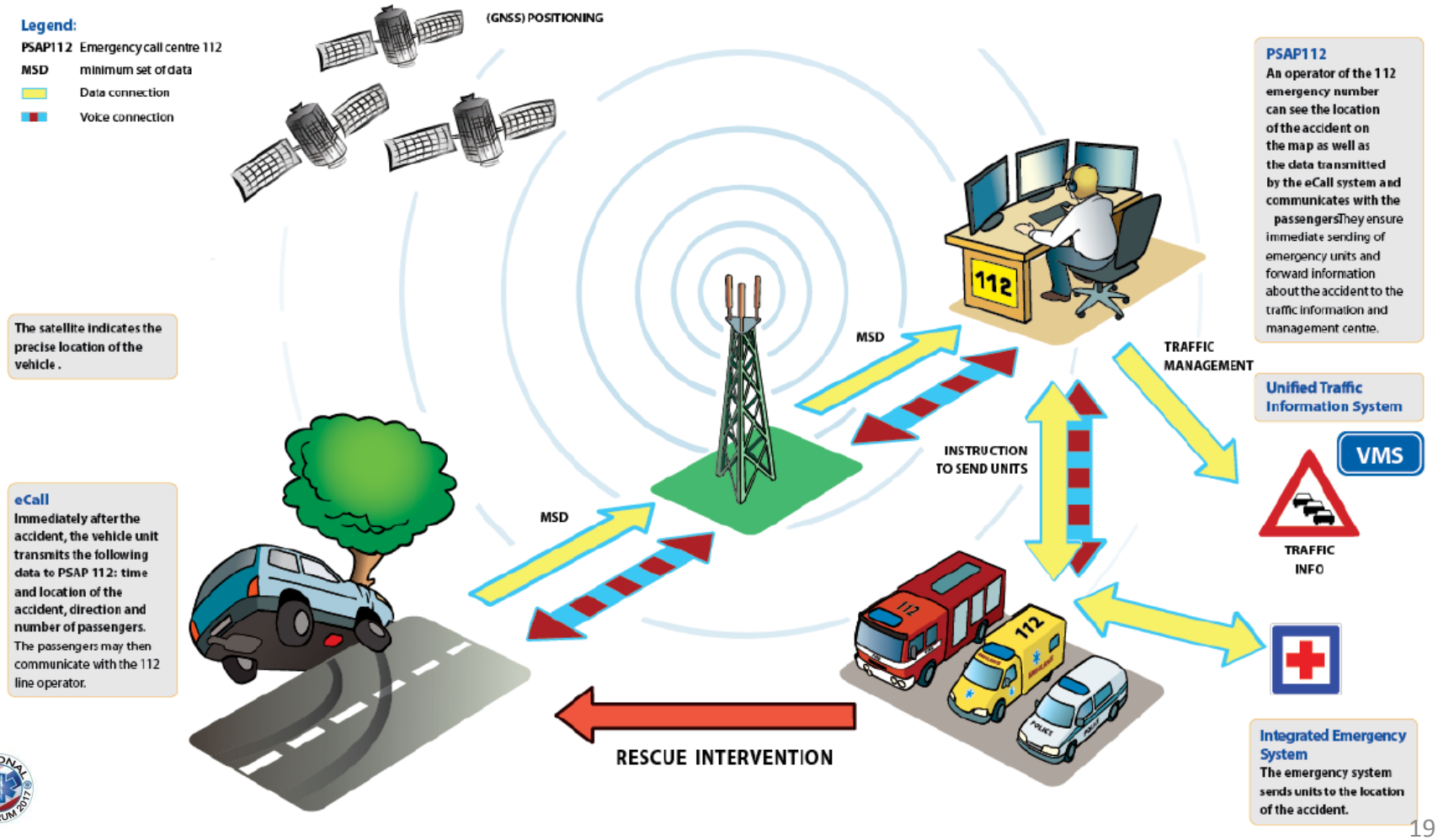
Information Technology: eCall

The European Parliament voted in favour of eCall regulation which requires all new cars be equipped with eCall technology from April 2018. In the event of a serious accident, eCall automatically dials 112 - Europe's single emergency number.

It communicates automatically to EMS:

In case of impact,
The vehicle's exact location,
The time of incident,
The direction of travel (on motorways)

eCall to 112



Source : EENA

Conclusion

- The weaknesses of AMPDS may be explained by the decision making process that balances between specificity and sensitivity
- The dysfunctions of Apps seem to be related to premature release and uneven market
- Dispatching doctor seems the most appropriate

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