Contemporary prehospital care and the function of an effective ambulance service

Peter Bradley
CEO, St John New Zealand
If you were given 100 Paramedics – no strings, what would you do? (And you could only choose one option)

A. Would you dump your emergency call prioritisation system and get these guys to supplement 111 call takers on a new call prioritisation approach?
B. Would you put them full time in the community developing new care pathways, rest home management, injury prevention and health promotion?
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The grey Tsunami is coming

The diabetics are coming - the pre-diabetics are here

An avalanche of the aged

Health bosses buy £90,000 'fat ambulances' for obese patients

XXXL the new L
We're big on asthma and lung disease

5.1.1. Asthma hospital admission in adults, 2006 and 2011 (or nearest year)

5.1.2. COPD hospital admission in adults, 2006 and 2011 (or nearest year)

Note: 95% confidence intervals represented by [—].
Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/888932917807
WILL YOU BE KILLED BY YOUR SOFA?
Diabetes

- 10th highest rate in OECD
- ...9th highest for children
Obesity

- NZ - 3rd highest rate in the OECD
- ...and rising fast
- ...big burden on people
- ...and health system
Health costs are growing

- Treasury’s latest update on long-term view of the sector, 2103

Figure 11: Core Crown Health expenditure, % GDP, long-term projection

Source: Treasury, 2013
Third of A&E patients ‘don’t need to be there’

People should be treated by paramedics and pharmacists, says NHS director

Too many frustrated patients ‘do not know where to seek medical care’

Hunt: GPs can take pressure off A&Es by being more ‘proactive’ in their care

http://www.youtube.com/watch?v=HMG1bOGu8q0
Which conditions caused the most ACS admissions?

In 2012/13, five individual ACS conditions accounted for more than half of all ACS admissions. These were urinary tract infection (UTI) and pyelonephritis (16 per cent of ACS admissions, 229 admissions per 100,000), COPD (12 per cent, 163 per 100,000), pneumonia (10 per cent, 141 per 100,000), ear, nose and throat (ENT) infections (9 per cent, 207 per 100,000) and convulsions and epilepsy (7 per cent, 142 per 100,000).

QualityWatch, Nuffield Trust 2013
Service advances require a “Shift Left”

- Paramedics
- Paramedic Practitioner
- Critical Care Paramedic
- HOME CARE
  - Healthy, Independent Living
  - Community Pharmacy
  - Chronic Disease Management
  - Community Matron
  - GP/Primary Care
- COMMUNITY CARE
  - Assisted Living
  - Nursing Home
- ACUTE CARE
  - Specialist Centre
  - ITU
  - District General Hospital

Quality of Life

Cost of Care per Day

Source: Intel.com

South East Coast Ambulance Service NHS Foundation Trust
New Delivery Model

- Hear and advise
- See and Treat
- See, treat and refer
- See, treat, refer & transport
Nine years on
what has changed?

Taking Healthcare to the Patient
Transforming NHS Ambulance Services
Mega trends of disruption in healthcare

1. Self determined healthcare - trusting the population
2. Anytime anywhere healthcare through transformational technologies (smart phones)
3. Insight and intelligence through the use of big data
4. Predict, prevent and personalise
5. A move from volume to value (outputs to outcomes)

Dr Lester Levy
A journey to 2022

2006
Launch of Twitter

2007
Apple launches the iPhone

2008
Lehman Brothers files for bankruptcy

2009
Urban dwellers become a majority of the global population for the first time

2010
China overtakes the US as world’s largest manufacturer

2011
Global population passes 7 billion

2012
Impact of resource scarcity comes into sharp focus as prolonged droughts threaten blackouts in Texas (power plants are the largest users of water in the US)

2013
Number of mobile devices and connections surpasses the number of people on the planet

2 Economist, 10.03.12
3 Guardian, 31.10.11
4 Reuters, 30 April 2013
2015: Worker in Germany says the “best is yet to come” after celebrating 75 years’ service with the same firm.

2016: $10 tablet computer comes on to the market.

2017: Assembly workers in factory in Hanoi start wearing sensors to gauge concentration, work rate and mood.

2018: Analysts attend presentation by Fortune 500 Chief Performance Officer, who heads a combined Finance and HR function.

2019: Doctor in China carries out ‘remote’ surgery on patient in Ghana.

2020: Rioting sweeps across university campuses as students lose patience with lack of job opportunities.

2021: Licences granted for driverless cars.

2022: World’s first fully automated and robot-served hotel opens.
Telehealth & Telecare

- Remote Patient Monitoring (RPM)
- Medicines management
- Patient assessment
- Advice & support
  - massive growth in smart mobile devices
  - 9.4m RPM connections expected by 2017
  - big opportunities for interconnectivity with health
St John/Vigil Telemonitoring Project

- Cloud based Telehealth solution
- Biometric analysis and alerts platform
- Configurable Telehealth solutions and user interfaces
- Wearable technology and supports 3rd party sensor device data
- Automatic data and EHR synchronisation with data encryption
Strategic Options

Divest and Specialise
- Emergency Service Model
  - Call taking
  - Low priority work
- PTS

Maintain and Integrate
- Emergency Service Remodel
  - Redesign workforce
  - Partnering with other agencies
- Clinical hub
  - New models of care

Grow and Lead
- Primary Urgent and Emergency Care Model
  - Multidisciplinary workforce
  - Out of hrs services
- Remote patient monitoring (RPM)
  - Telehealth

Remove Demand
Absorb Demand
Encourage Demand
No magic bullet

- What is the ambulance equivalent of a smoke alarm?
ONLY ONE OF THESE IS A TAXI SERVICE

Need medical advice or treatment?
Talk to a pharmacist.
Call NHS Direct 0845 46 47 (24hrs)
Visit your...
- GP surgery
- NHS walk-in centre

Or... if it’s urgent, consider going to a hospital A&E department using a real taxi!

In a medical emergency:
Stay calm... dial 999
Describe your exact location
Is the casualty...
- breathing?
- conscious?
- bleeding seriously?
- having persistent chest pain?
Get someone to signal where the ambulance crew is needed.

www.londonambulance.nhs.uk

London Ambulance Service
NHS
The London Ambulance Service is reaching more patients quicker than ever before. But we need your help so that we can continue to provide the fastest possible response to anyone who is seriously ill or injured.

Our staff work very hard to care for everyone who calls us, although we would like to remind you that if it’s not a life-threatening emergency, there are a number of other options to consider before phoning 999:

- Self-care at home
- Talking to your local pharmacist
- Calling NHS Direct on 0845 4647
- Attending a local NHS Walk-in centre
- Visiting your GP
- Making your own way to your local A&E department. Arriving in an ambulance does not mean you will be seen more quickly

Use your ambulance service wisely.
New Delivery Model

- Hear and advise
- See and Treat
- See, treat and refer
- See, treat, refer & transport
Is it cost effective to introduce paramedic practitioners for older people to the ambulance service? Results of a cluster randomised controlled trial

S Dixon,1 S Mason,2 E Knowles,2 B Colwell,2 J Wardrope,3 H Snooks,4 R Gorringe,5
J Perrin,3 J Nicholl1
Effectiveness of paramedic practitioners in attending 999 calls from elderly people in the community: cluster randomised controlled trial

Mason et al 2007

3018 patients over 60 years old

✓ Less likely to attend ED
✓ Less likely to require admission within 28 days
✓ More likely to be highly satisfied
EMS Makes a Difference: Improved clinical outcomes and downstream healthcare savings

A Position Statement of the National EMS Advisory Council

December 2009

1. Emergency care (cardiac, stroke, trauma, sepsis)
2. Urgent care (prescribing, healthline, integrated community workforce)
3. Mental health
4. The frail elderly and falls
5. Long term conditions
6. Care for patients at the end of life
7. Public health and prevention

National Ambulance Service Medical Directors (NASMeD)
Ambulance control rooms play a key role
Time critical?

• 75%
• A8
Reducing on Scene Times

- Penetrating Trauma (15 minutes)
  - Aim for less than 5 minutes for central penetrating trauma
- Stroke (35 minutes)
  - Aim for less than 30 minutes
- Acute Coronary Syndrome (37 minutes)
- Overdoses - potentially lethal (23 minutes)
Air coordination and integration is key
London’s major trauma system - in year one 58 people survived who were expected to die of their injuries
Face Arms & Speech Test

Suspect a stroke? Act FAST. Call 999.

FAST

Facial weakness
Arm weakness
Speech problems

Time to call 999
Stoke is a medical emergency.

www.stoke.org.uk

www.secamb.nhs.uk
Acute Coronary Syndrome

A CHEST PAIN IS YOUR BODY SAYING CALL 999

DOUBT KILLS. CALL 999 IMMEDIATELY.
Resuscitation

- Highest ever cardiac arrest survival rate!
What is St John in New Zealand doing?
The impact we have on the health system is significant

- Ambulance patients accounts for 36% of ED attendances and 64% bed days
- 18% of ambulance patients have attended ED 4 or more times in the past year
- 80% of COPD, 73% of UTI patients and 66% of CHF patients are brought in by ambulance
- The Health economics are compelling – 1% of the total health spend – circa 10% impact
Non time critical

Clinical Hub

Clinical Support Comms Centre
- Clinical advice to call takers and dispatchers
- Oversight of specialist responses
- Managing critical transfer decisions

Clinical Support Ambulance Staff
- Guidance to crews on bypassing
- Specialist clinical advice

Clinical Telephone Advice
- Enhanced clinical assessment of pre agreed calls
- Triage of calls referred by GP or other Health Professional
- Directory of Services

Demand Management
- Demand Management Plan implementation and oversight
- Reprioritisation of incidents
- Frequent caller management

Patient Support
- End of life / patient specific care plans
- Children and vulnerable adult referral
- Mental Health Management
Patient Pathways – going beyond the proof of concept stage

- Local
- District
- Regional
- National
- International
- Falls
- COPD
- POAC
EPRF Tablet
A Key enabler

Job details to MDT → Auto-create ePRF → Write ePRF

“Responding”

“Transporting; ETA 15 min”

“At scene”

Write ePRF

“At destination”

Finalise ePRF

Send NHI, status, prov. diagnosis, ETA to hospital status board

Hospital system can access ePRF

Send ePRF Summary to GP → ACC claim → Complaint/enquiry/Coroner → Research extracts

Clinical Audit → Billing → CCE → Planning Extracts

Real-time Reporting

Access Information

Previous PRFs
NHI
Medical warnings
Discharge summaries
Primary care records

Demographics
Assessment
Observations
Treatments

Photos
ECGs

CPGs NZULM/formulary TOXINZ etc...
New Clinical Practice Guidelines (CPG) rolled out for staff
Our Workforce

- Clinical career path – case mix appropriate
- Mixed model based on patient need/demographic
- Access to clinical information & decision support software
- Access to multi disciplinary teams
- Specialist practitioners not clock stoppers
- Clinical roles in control rooms need to attractive
- Clinical Leaders are needed to role model the future
There will be a major shift away from the thinking that we learn one profession, have one job and stay in it for decades.

Female, voluntary worker (aged 33 – 47), Germany.
Health promotion and prevention

- Heart Safe
- Blood Pressure Awareness Campaigns
- Diabetes screening
- Alcohol abuse awareness
- Collaboration on national campaign on appropriate use of 111
- We must leverage the opportunities we have with our thousands of staff and volunteers
Improving Clinical Governance, Quality and safety

- Learning lessons from serious and adverse incidents
- Understanding the health needs of high risk patient groups
- Our Boards and wider health knowing the risks & issues
- Formalising reporting arrangements for vulnerable children and adult cases
- Strengthening our clinical audit and research
- Infection control
Measuring and reporting the quality of what we do

- Use of alternative pathways
- Cardiac arrest survival to discharge
- Stroke, trauma & ACS outcomes
- Recontact rates
- Discharge and admission rates
- Learning from serious incidents
- Feedback from our patients – patients stories and experience
The effect of a national quality improvement collaborative on prehospital care for acute myocardial infarction and stroke in England

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Abstract

Background: Previous studies have shown wide variations in prehospital ambulance care for acute myocardial infarction (AMI) and stroke. We aimed to evaluate the effectiveness of implementing a Quality Improvement Collaborative (QIC) for improving ambulance care for AMI and stroke.

Methods: We used an interrupted time series design to investigate the effect of a national QIC on change in delivery of care bundles for AMI (aspirin, glyceryl trinitrate [GTN], pain assessment and analgesia) and stroke (face-am-speech test, blood pressure and blood glucose recording) in all English ambulance services between January 2010 and February 2012. Key strategies for change included local quality improvement (QI) teams in each ambulance service supported by a national coordinating expert group that conducted workshops educating staff in QI methods to improve AMI and stroke care. Expertise and ideas were shared between QI teams who met together at three national workshops, between QI leads through monthly teleconferences, and between the expert group and participants. Feedback was provided to services using annotated control charts.

Results: We analyzed change over time using logistic regression with three predictor variables: time, gender, and age. There were statistically significant improvements in care bundles in nine (of 12) participating trusts for AMI (OR 1.04, 95% CI 1.04, 1.04), nine for stroke (OR 1.06, 95% CI 1.05, 1.07), 11 for either AMI or stroke, and seven for both conditions. Overall care bundle performance for AMI increased in England from 43 to 79% and for stroke from 83 to 96%. Successful services all introduced provider prompts and individualized or team feedback. Other determinants of success included engagement with front-line clinicians, feedback using annotated control charts, expert support, and shared learning between participants and organizations.

Conclusions: This first national prehospital QIC led to significant improvements in ambulance care for AMI and stroke in England. The use of care bundles as measures, clinical engagement, application of quality improvement methods, provider prompts, individualized feedback and opportunities for learning and interaction within and across organizations helped the collaborative to achieve its aims.

Keywords: Quality improvement, Performance measures, Prehospital care, Team training, Audit and feedback, Interrupted time series design
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Final thoughts... (1)

- Control rooms centre stage (air, road, phone)
- Tailored care – PSPs and pathways (directory of services)
- Clinical information used to drive decisions
- Clinical leaders – visible, influential
- Patients centre stage – patient stories, patient advocates
- Outcomes focus (with benchmarking)
- Right destination for our patients first time – stroke, trauma and cardiac
Final thoughts.... (2)

- We need to better understand the quality of care we are providing and use this to best effect – internally and externally
- We need to keep engaging with key health influencers – and be listened to
- Those initiatives that are scalable – need to be
- We need to make some courageous decisions
- We have a fantastic opportunity to realise our full potential