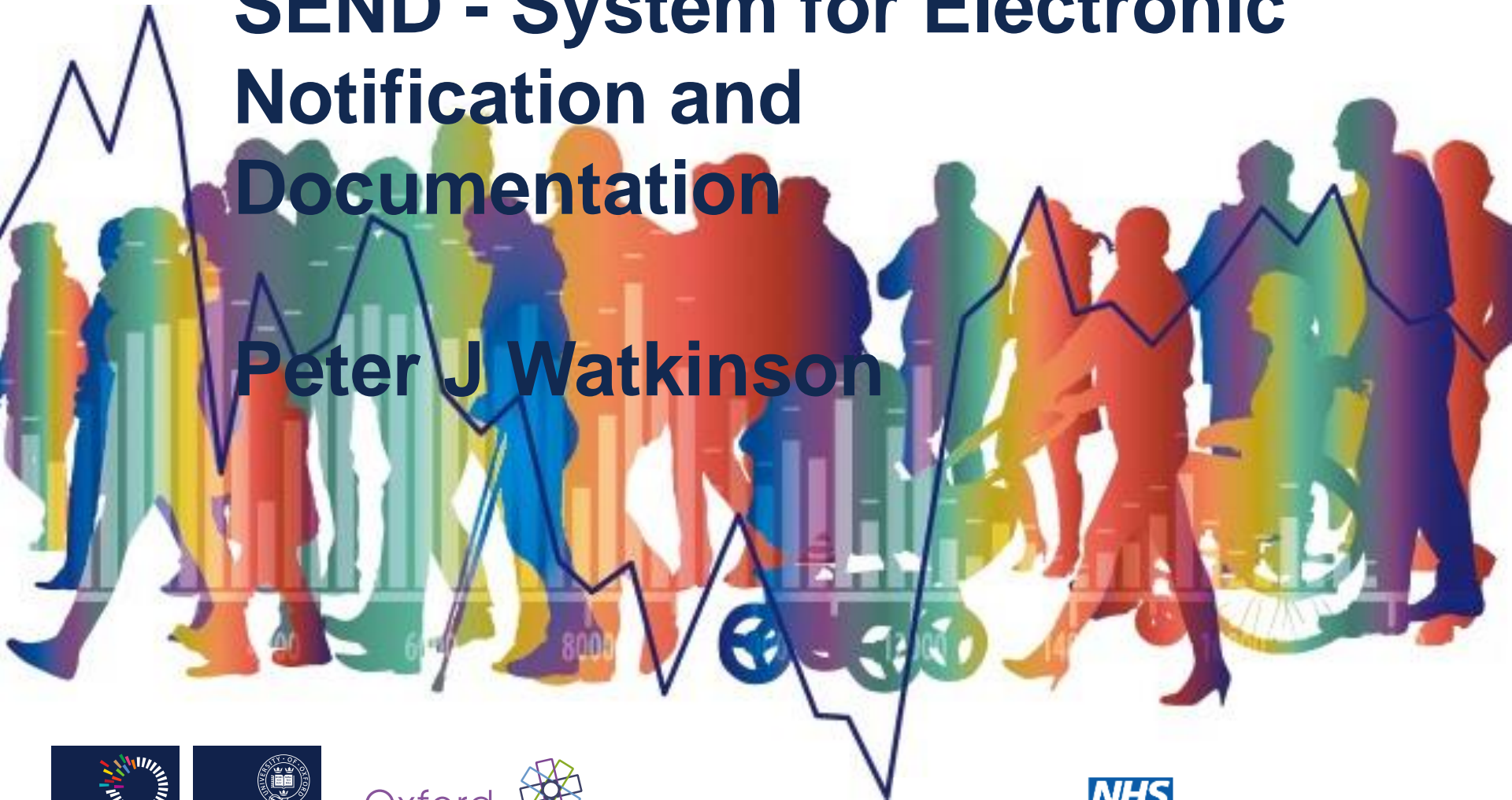




# **SEND - System for Electronic Notification and Documentation**

**Peter J Watkinson**



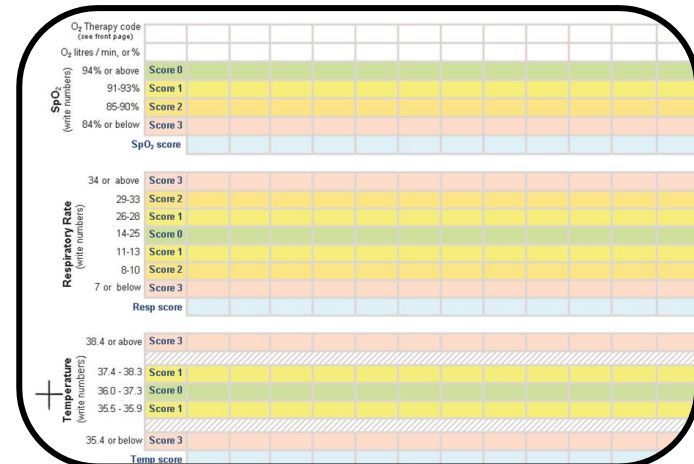
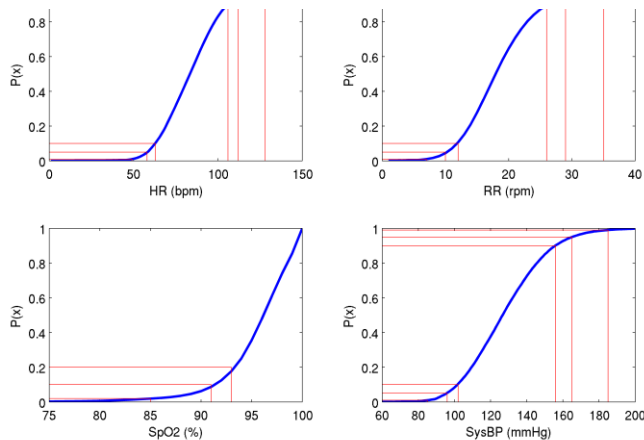


# What's the problem?

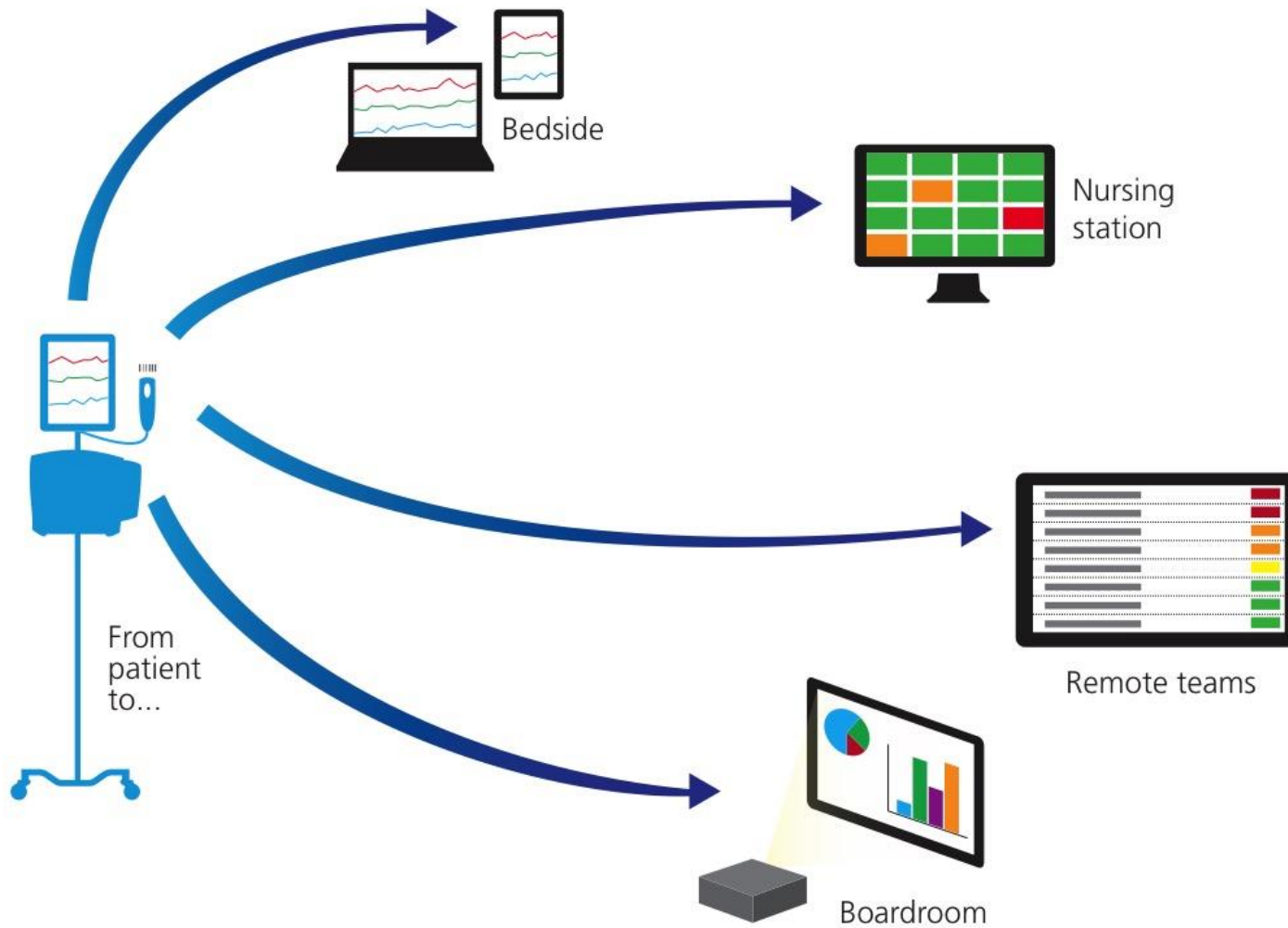








# Who needs the information?





## Ergonomic, efficient design





## Fast, easy data entry

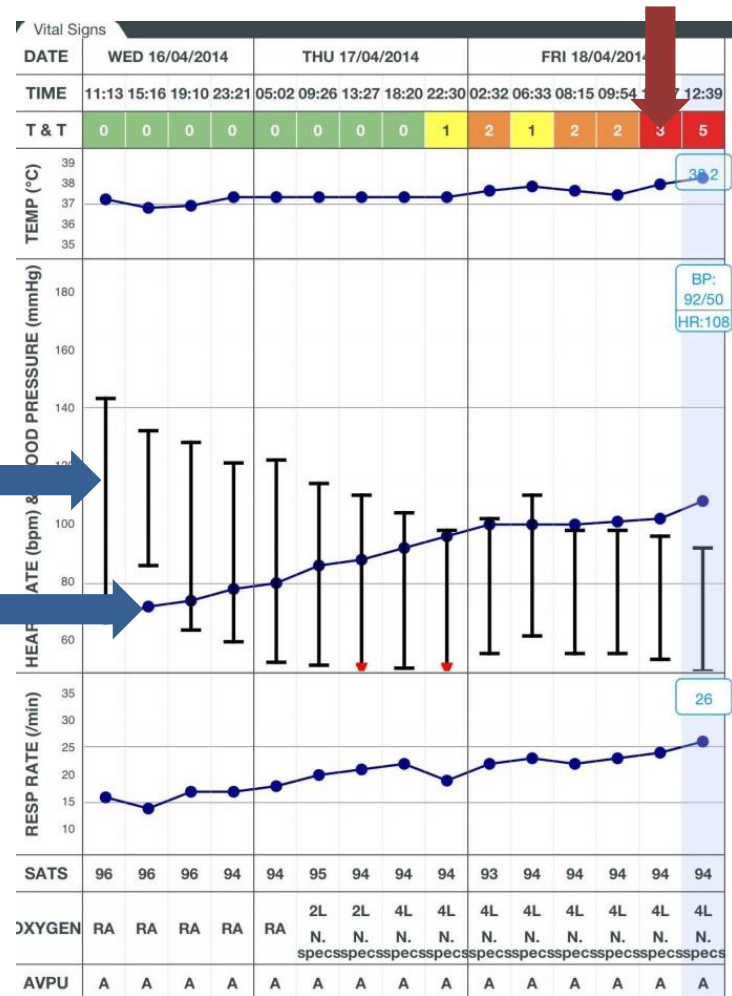




## Clear intuitive display of vital signs

Blood pressure

Heart rate







# Deteriorating patients identified at a glance

<div><div>← ↻ 🏠 Home ⚙️ Admin</div><div>🔍 Log Out Tim BONNICI</div></div>									
<div>CWD The Oxford Upper GI Centre (OUGI) <span>View Report</span></div>									
Bay/Bed		Patient	Starred	Admission	Priority ▾				
Side Room 26	Bed 26		★	Admitted 30 Sep 2015		obs 1 hr 7 m overdue	LATEST OBS ▾		
Bay A	Bed 04		★	Admitted 17 Oct 2015		obs 1 hr 4 m overdue	LATEST OBS ▾		
Side Room 19	Bed 19		★	Admitted 27 Sep 2015		obs 1 hr 44 m overdue	LATEST OBS ▾		
Bay B	Bed 06		★	Admitted 14 Oct 2015		obs 1 hr 17 m overdue	LATEST OBS ▾		
Side Room 25	Bed 25		★	Admitted 11 Oct 2015		obs 1 mins overdue	LATEST OBS ▾		
Bay C	Bed 09		★	Admitted 15 Oct 2015		2 hr 47 m since last obs	LATEST OBS ▾		

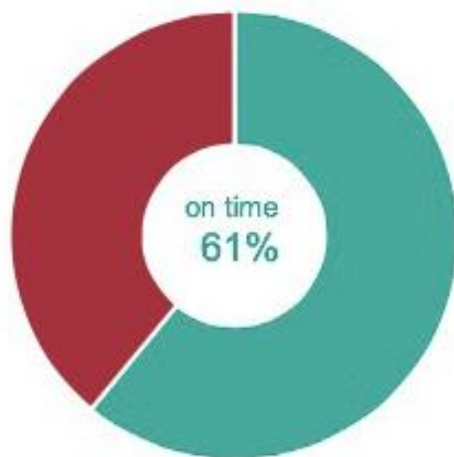




## Real-time audit – continuous quality improvement

### Overall Performance

All observations taken on time this month

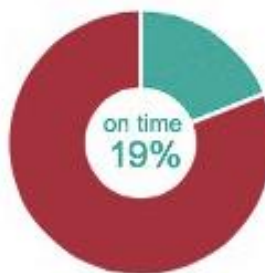


On Time: 61%  
Late: 39%

### Summary »

#### 1 Hourly Obs

(T&T score of 3 or more)



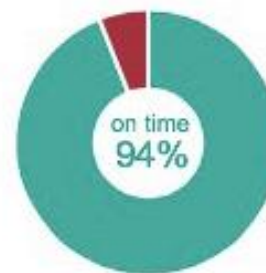
#### 4 Hourly Obs

(T&T score of 1-2)



#### 12 Hourly Obs

(T&T score of 0)





## Proven in practice

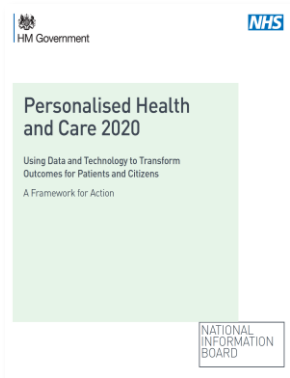
- 4 hospitals
- 7.5 million observations
- 43,000 patients
- No down time





# The benefits of good research coupled with good design

- Up to 3 minutes faster per observation set
- Minimal training
- System Usability Score 77.8
- Improved organizational management





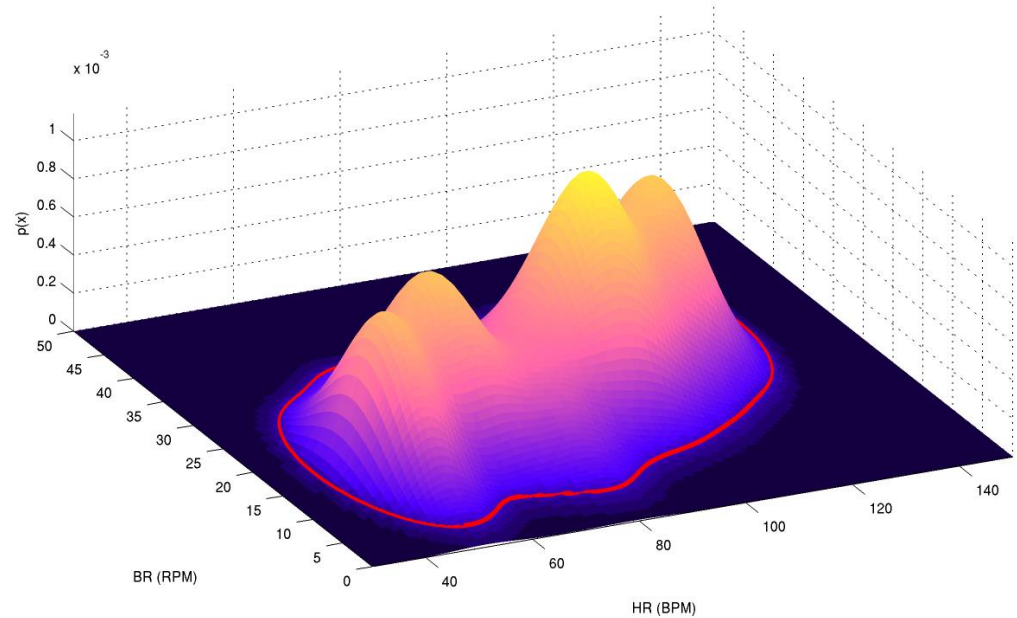
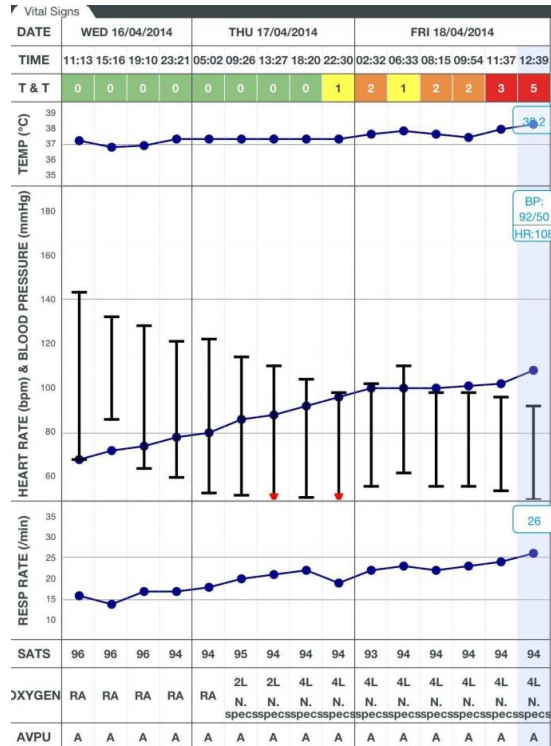


# The immediate future



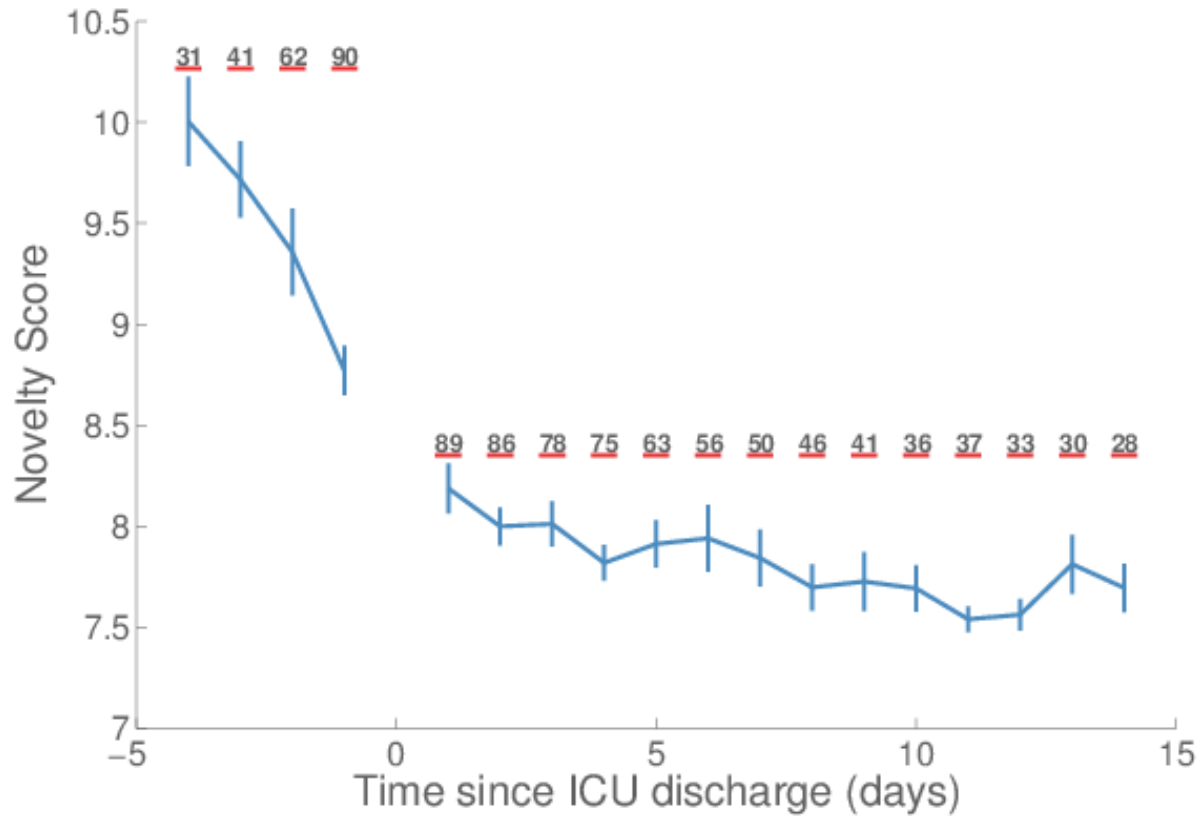


# From addition to a multi-dimensional space





## Subpopulation models



Johnson *et al*: Physiological trajectory of patients pre-and post-ICU discharge. Conf Proc IEEE Eng Med Biol Soc. 2014:3160-3





**And then?**





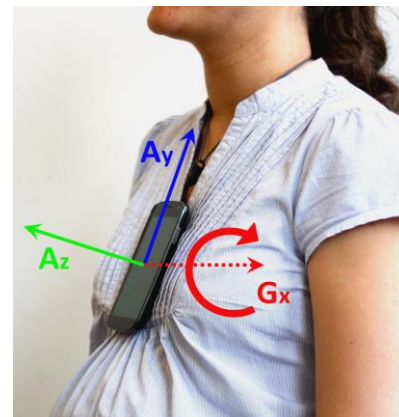
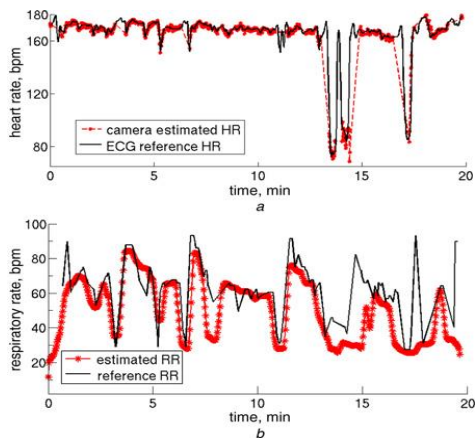


**Individualised alerting**





# Individualised alerting



*Villarroel et al*, health technology letters 2014



The background features a colorful, semi-transparent illustration of a diverse crowd of people in various poses, including a person in a wheelchair. A jagged, purple line resembling a heartbeat or vital sign graph is overlaid on the crowd.

**SEND – 7.5 million vital signs to drive  
improvement in patient recognition**

**[www.send-system.co.uk](http://www.send-system.co.uk)**