Lessons learnt from long-term chronic condition monitoring

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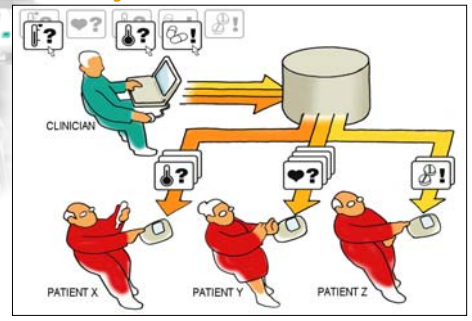
Chronic Disease Monitoring

- EU Framework 5 funded projects, doc@HOME and "REALITY"
- Home-based monitoring of chronically ill patients
- Disease areas include Hypertension, Asthma, Respiratory Failure (COPD), Heart failure, Diabetes
- 500+ patients
- New DofH initiative for CDM just announced

System Architecture



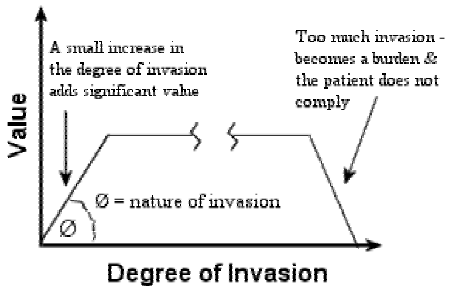
Doc@HOME is CE marked as MDD qualified class IIa medical device

The clinicians view

The need for invasion

- Better monitoring, better management
- Physiological + symptoms, side effects and quality of life
- But how much invasion?
  - Impacts on routine
  - Too much becomes a burden
    - Leads to reduction of compliance

Invasion vs value

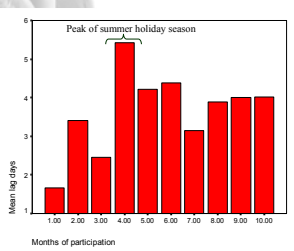


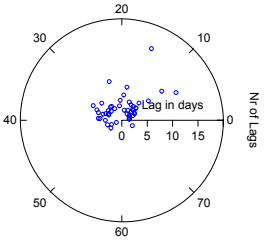
Disease specific benefits

- High resolution data collection
  - A "sea of data" – searching for the benefits
  - Trend detection; precise BP & real effects of medication
- Medication compliance benefits
  - Compliance increased by >100%
- Patient understanding and self control

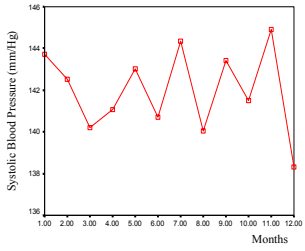
Interaction Compliance

- ***Voluntary, patient initiated interaction;***
- ***mean lag days (days between successive interactions) used as a measure of compliance.***
- ***usage levels can be optimised by employing a user interaction refresh period of less than 3-months – design in***





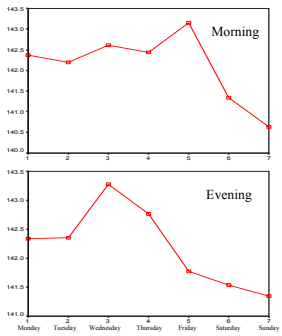
Compliance – BP Measurement #1



Conclusions

- Blood pressure cycles correlated with the period of clinician consultations (approx 3 months)
- Patients are "nagged" when they see their consultant and this results in better drug compliance / lifestyle, which then tails off.
- Automated / semi-automated "nagging" could improve the situation.

Compliance – BP Measurement #2



Conclusions

- BP drop from Friday evening
- BP increase from Monday
- Drug compliance is low over the weekend
- High risk caused by combination of stress and lack of medication – target intervention at high risk points

Self Registered Compliance?

- Self (voluntary) registration of anti-hypertensive medication compliance by patients.
- Very high correlation found between self-registered compliance and BP control.
- Results suggest that self-registered compliance is a relatively reliable measure.

The need for training

- The patient
  - Needs to understand benefits
    - the obvious
    - the long term
- The healthcare professional
  - Needs to understand benefits
  - A new process
  - New protocols

Barriers to entry

- Recognition of benefits in clinical community – lack of funding
- Commercial considerations
  - Cost, reimbursment mechanisms, reliability
- Regulatory considerations
  - MHRA/FDA
  - Data security
- Lack of standards
  - TV industry model
  - Interoperability
  - Co-operation is key

In conclusion

- Better monitoring essential to control chronic disease
- Level of invasion managed
- Standards to allow inter-operability needed

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Thank you!

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