EVIDENCE IN LITERATURE ON HEALTH TECHNOLOGY

Clinicians rightly ask whether there is sufficient evidence for Health Technology. There are a large number of ongoing and successful implementations of Health Technology, however the literature on the subject is mixed because so much of it depends on how it is implemented, on the patient group that is targeted and how this patient group is engaged with the service.

Important evidence for Health Technology comes from the Whole System Demonstrator (WSD), an RCT with 3,230 patients in Newham, Kent and Cornwall conducted in 2008/2009. As reported by Steventon et al[1] *"Health Technology can deliver a 15% reduction in A&E visits, a 20% reduction in emergency admissions, a 14% reduction in elective admissions, a 14% reduction in bed days and an 8% reduction in tariff costs"*. However the WSD is not without its limitations. As acknowledged in other papers from the trial team, there was in fact no system redesign and patient selection was not done on the basis of suitability for remote care[2], neither was this study able to demonstrate a positive economic result.

A recent meta-analysis[3] of RCTs and observational studies of readmission reduction in patients with heart failure found a general reduction in readmissions although there was also one paper in which the control group did better than the intervention group. Interestingly the authors observe that the impact of remote monitoring depends on the quality of the 'usual care' in any particular study. These results confirm an earlier Cochrane review[4] which concluded that telemonitoring of patients with heart failure reduced the rate of death from any cause by 44% and the rate of heart-failure–related hospitalisations by 21%. However, the quality of the methods used in the reviewed studies was variable, and many of them were small.

Another review[5] from the Cochrane collaboration on Health Technology for COPD also found broadly positive results and concluded that Health Technology in COPD appears to have a possible impact on the quality of life of patients and the number that attend the emergency department and the hospital.

A very extensive overview[6] of studies on "Interventions to reduce unplanned hospital admission" by the Bristol and Cardiff groups, which is available online found that *"There was evidence that education/selfmanagement, exercise/rehabilitation and telemedicine in selected patient populations, and specialist heart failure interventions can help reduce unplanned admissions. However, the evidence to date suggests that majority of the remaining interventions included in these reviews do not help reduce unplanned admissions in a wide range of patients."*

We stress that the proposed Health Technology service in Liverpool is both about monitoring and education. Although common sense suggests that education is a good thing, solid evidence for a beneficial impact is limited. A trial in Spain with the Philips Motiva system demonstrated a positive result[7] and a recent paper[8] in the Journal of the American Geriatrics Society found that Care management coupled with content driven Health Technology, technology has potential to improve health outcomes.

Mi®

more independent

A recent paper[9] in the BMJ on a trial in Lothian acknowledges that *"the heterogeneity of interventions that use telemonitoring contributes to the difficulty in interpreting outcomes"*. The investigators responded to that observation by creating an RCT in which the issue of Health Technology technology is purely an add-on to existing services. They find, in the words of an accompanying editorial, that Health Technology *"adds little to well supported self-management"*. That does not mean however, that Health Technology does not have a role in comprehensive service redesign and efficiency savings.

The importance to get the delivery model (as well as the technology) right is also highlighted in the UK government change in direction for its 3 million lives programme[10]. This has been done to create closer ties with integrated care and social care agendas. Although this has led to some bad press[11] the real message is that Health Technology should not be seen in isolation but as part of coordination and integration with the wider health and social care services, so they become a mainstream service, not a side-line proposition.

We therefore believe that the overall literature supports the view that Health Technology, as part of a well designed service and well supported self-management, can deliver substantial benefits in terms of admission reduction and outcome improvements. We target the service at patients who, on the basis of disease profile, admission risk and personal profile, are likely to gain benefit. The service in Liverpool is delivered in a flexible way that engages with patients and fits in with the way GPs want to work with their patients.

[1] "Effect of Health Technology on use of secondary care and mortality: findings from the Whole System Demonstrator cluster randomised trial" Adam Steventon, Martin Bardsley, John Billings, Jennifer Dixon, Helen Doll, Shashi Hirani, Martin Cartwright, Lorna Rixon, Martin Knapp, Catherine Henderson, Anne Rogers, Ray Fitzpatrick, Jane Hendy and Stanton Newman [Nuffield] BMJ 2012;344:e3874 doi: 10.1136/bmj.e3874 (2012)

[2] "An organisational analysis of the implementation of telecare and Health Technology: the whole systems demonstrator" Jane Hendy, Theopisti Chrysanthaki, James Barlow, Martin Knapp, Anne Rogers, Caroline Sanders, Peter Bower, Robert Bowen, Ray Fitzpatrick, Martin Bardsley, Stanton Newman [Imperial] BMC Health Services Research 12:403 doi:10.1186/1472-6963-12-403 (2012)

[3] "Remote monitoring after recent hospital discharge in patients with heart failure: a systematic review and network meta-analysis" Abdullah Pandor, Tim Gomersall, John W Stevens, Jenny Wang, Abdallah Al-Mohammad, Ameet Bakhai, John G F Cleland, Martin R Cowie, Ruth Wong Heart 2013; 99:1717-1726 doi:10.1136/hear jnl-2013-30381

[4] "Structured telephone support or telemonitoring programmes for patients with chronic heart failure" Ingis SC, Clark RA, McAlister FA, Ball J, Lewinter C, Cullington D, Stewart S, Cleland JGF, Cochrane Database of Systematic Reviews 2010, Issue 8. Art. No.: CD007228. DOI: 10.1002/14651858.CD007228.pub2 (2010)

[5] "Health Technologycare for chronic obstructive pulmonary disease" Susannah McLean, Ulugbek Nurmatov, Joseph LY Liu, Claudia Pagliari, Josip Car, Aziz Sheikh, Cochrane Database of Systematic Reviews 2011, Issue 7. Art. No: CD007718. DOI: 10.1002/CD007718.CD007228.pub2 (2011)

[6] www.bristol.ac.uk/primaryhealthcare/docs/projects/unplannedadmissions.pdf

[7] "Noninvasive remote telemonitoring for ambulatory patients with heart failure: effect on number of hospitalizations, days in hospital, and quality of life" Domingo M, Lupón J, González B, Crespo E, López R, Ramos A, et al. CARME (Catalan Remote Management Evaluation) Study. Rev Esp Cardiol vol 64 pp277-85 (2011)

[8] "Effects of Care Management and Health Technology: A Longitudinal Analysis Using Medicare Data" Laurence C. Baker, Dendy S. Macaulay, Rachael A. Sorg, Melissa D. Diener, Scott J. Johnson, Howard G. Birnbaum, Journal of the American Geriatrics Society vol 61 (9) pp 1532-5415 (2013)

[9] "Effectiveness of telemonitoring integrated into existing clinical services on hospital admission for exacerbation of chronic obstructive pulmonary disease: researcher blind, multicentre, randomised controlled trial" Hilary Pinnock, Janet Hanley, Lucy McCloughan, Allison Todd, Ashma Krishan, Stephanie Lewis, Andrew Stoddart, Marjon van der Pol, William MacNee, Aziz Sheikh Claudia Pagliari, Brian McKinstry BMJ 2013;347:f6070 (2013)

[10] "New technology can improve the health services delivered to millions of people" Rachel Cashman, NHS England news archive November 2013 www.england.nhs.uk/2013/11/15, accessed 9 Dec 2013 (2013)

[11] www.pulsetoday.co.uk/commissioning