# Table of Contents

Clinical Academic Paper ......................................................................................... 6

Abstract .................................................................................................................. 6

Background .............................................................................................................. 7

Aim of the review .................................................................................................... 8

Search strategy ........................................................................................................ 8

  Inclusion criteria .................................................................................................. 9

  Exclusion criteria ................................................................................................. 9

Search results ......................................................................................................... 9

  Aims of the studies .............................................................................................. 10

  Amount of intervention ....................................................................................... 16

  Intervention intensity .......................................................................................... 17

  Timing of commencement of the intervention .................................................... 17

  Delivery of intervention ....................................................................................... 18

  Outcome Measures ............................................................................................. 18

What we have learned ............................................................................................ 22

Clinical Implications ............................................................................................ 23

Acknowledgements ............................................................................................... 24

References ............................................................................................................. 25

Power, Politics and Policy Module Assignment .................................................... 29

Introduction ........................................................................................................... 29

Health policy and health policy analysis ............................................................... 30

  Content – description of the policy .................................................................... 33

  Context – the political landscape ....................................................................... 35

The Influence of Actors on Policy ......................................................................... 38

Policy Implementation and Evaluation .................................................................. 41
Discussion.................................................................................................................. 42
Conclusion .................................................................................................................. 45
References.................................................................................................................. 47

Advanced Research Methods Module Assignment.................................................. 50

A – scenario 1: Living Well with Dementia ................................................................. 50
  Introduction ................................................................................................................. 50
  Research design ......................................................................................................... 50
  Data Collection Methods .......................................................................................... 51
  Sampling ...................................................................................................................... 52
    Inclusion criteria ....................................................................................................... 53
    Exclusion criteria ...................................................................................................... 53
  Ethical considerations ................................................................................................. 54
  References.................................................................................................................. 55

A – scenario 2: A comparison of hospital versus telephone follow up after treatment for breast cancer................................................................. 57
  Introduction ................................................................................................................. 57
  Literature search ......................................................................................................... 57
  Research design ......................................................................................................... 57
  Data collection ............................................................................................................ 59
  Sampling ...................................................................................................................... 60
    Inclusion criteria ....................................................................................................... 60
    Exclusion criteria ...................................................................................................... 61
  Ethical considerations ................................................................................................. 61
  References.................................................................................................................. 62

B – scenario 4: Evaluation of a CBT training programme for palliative care staff .... 63
Introduction ........................................................................................................................................ 63
Research design .................................................................................................................................. 63
Data collection methods ....................................................................................................................... 64
Sampling ............................................................................................................................................... 64
Ethical considerations .......................................................................................................................... 65
Conclusion ............................................................................................................................................ 65
Section B Scenario 4: Presentation Slides ............................................................................................ 66
References ............................................................................................................................................ 70

Service evaluation and Leadership Module Assignment ................................................................. 71
Introduction ........................................................................................................................................ 71
Service Evaluation ............................................................................................................................... 71
  Aim .................................................................................................................................................... 72
  Objectives ......................................................................................................................................... 72
  Underpinning framework .................................................................................................................. 72
  Literature review ............................................................................................................................... 74
  Methodology ....................................................................................................................................... 74
  Methods ............................................................................................................................................ 75
  Data Collection ................................................................................................................................. 76
  Sampling ........................................................................................................................................... 76
  Ethical considerations ....................................................................................................................... 78
  Risk assessment ............................................................................................................................... 78
  Economic evaluation ......................................................................................................................... 78
The Leadership challenge ..................................................................................................................... 79
  Leadership approach ....................................................................................................................... 82
  Conclusion ......................................................................................................................................... 84
Table of Tables

Table 1: Uni-intervention study characteristics .................................................. 11
Table 2: Uni-intervention study characteristics .................................................. 12
Table 3: Uni-intervention study characteristics .................................................. 13
Table 4: Multi-intervention study characteristics ................................................. 14
Table 5: Professions covered by the title AHP and numbers of registrants .......... 30
Table 6: Key content of AHQW (DH 2008a) by section ..................................... 33
Table 7: Distinctive features and core skills of expert medical practitioners ........ 34
Table 8: Detail of MPET funding ......................................................................... 35
Table 9: Stakeholders in AHQW (2008a) ............................................................. 40
Table 10: Institutions created as a result of AHQW (2008a) .............................. 41
Table 11: NHS London MPET spend by year ..................................................... 42
Table 12: Factors considered within an SPO model .......................................... 74
Table 13: Data collection methods .................................................................... 77
Table 14: Inclusion an exclusion criteria ............................................................ 77
Table 15: Risk assessment .................................................................................. 78

Table of Figures

Figure 1: A model for health policy analysis ....................................................... 31
Figure 2: DH publications influencing AHQW (DH 2008a) ............................... 38
Figure 3: Developing and evaluating complex interventions ............................ 73
Clinical Academic Paper

Impact of Physiotherapy and Physical Activity Intervention on Hospitalised Older Medical Patients: A review of the literature

Abstract

Background: Despite national strategies, the number of patients admitted to hospital care is increasing. Functional decline associated with hospitalisation may be rehabilitated with physiotherapy but the relationship between patient outcomes and physiotherapy is not clear.

Methods: A search of international literature published in the last 13 years was conducted. Key components of the interventions were evaluated to determine what had been offered, what outcomes resulted and whether a theoretical basis was proposed.

Results: Studies related to physical activity intervention alone and as part of a multi-faceted programme were revealed by the study. Dose of intervention and reported outcomes were inconsistent across studies. No study proposed a theoretical basis for either the design or findings.

Conclusion: The literature did not allow the establishment of consistencies regarding the impact of physiotherapy and physical activity intervention in hospitalised older medical patients. Current evidence is not available to inform physiotherapy service models in order to best meet the needs of this patient group.

Keywords: Acute care, Physiotherapy, Older adults, Exercise, Rehabilitation.
Background

One of the successes of society and medicine in the past 50 years has been the increase in life expectancy. However, as people age, they are increasingly more likely to live with co-morbidities and disability [1] including the two challenging manifestations of ageing, frailty and dementia. National strategy for older adults is focussed on prevention of these problems, enabling people to live well with chronic conditions, retain their independence and keep out of hospital [2]. Despite this the number of elderly patients admitted to secondary care in the United Kingdom is increasing and people over 65 admitted to hospital non-electively account for 53% of all bed days [3] and 80% of hospital admissions that involve stays of more than 2 weeks [4].

It is known that the aetiology of poor physical function in older adults is the result of multifactorial and complex processes that are influenced by physiological [5], psychological, environmental, and sociological factors [6]. Further functional decline is commonly associated with hospitalisation [7-11] and lack of activity has been suggested as a primary factor in this decline [12, 13]. The potential for these changes to be reversed with rehabilitation are also reported [14]. Physiotherapy is a rehabilitation profession, which through utilising physical activity interventions, works to develop, maintain and restore movement and functional ability, maximising quality of life for people [15]. The multiple factors associated with functional decline in hospitalised older adults present challenges for targeting interventions such as physiotherapy.

The proposal is that function might be rehabilitated through high dose repetition of exercise and task specific activity [16] and that physiotherapy may improve mobility, activity and participation [17]. Evidence suggests that targeted physiotherapy
interventions positively affect de-conditioned elderly populations [18]) although a Cochrane review concluded that there was not enough evidence to determine the benefits and harms of exercise for hospitalised older adults [19]. It appears that physiotherapy is effective, some of the time, for some problems of some patients.

The goal of any clinical service provision is to ensure that the patients receive a high quality service, which must be defined in terms of patient outcomes, not the volume of services delivered [20]. However the relationship between patient outcomes and physiotherapy intervention is not assured. There is a need to establish if, how, and in what circumstances physiotherapy intervention might work or not work for hospitalised older adults in order to provide efficacious physiotherapy services.

**Aim of the review**

The aim of the review was to understand the impact of physiotherapy and physical activity interventions (PAI) on hospitalised older medical adults.

**Search strategy**

A comprehensive search and review of available literature was undertaken. Search terms and derivations were as follows: aged/older/elderly/geriatric and hospital/hospitalized/acute medical and exercise/rehabilitation/physiotherapy and ADL/physical-functioning/physical-performance/mobility/gait/strength. In order to capture the spectrum of literature in this area the search was not limited by study design. Rehabilitation and exercise were included as surrogate terms for physiotherapeutic interventions. Exercise and rehabilitation were further defined as specific, directed physical exercise/intervention. The term PAI is used to denote physiotherapy, exercise or rehabilitation activity from this point forward.
Inclusion criteria

Studies with participants aged 65 years or older admitted with an acute medical condition to an acute care facility. An acute care facility was defined as a facility offering emergency and specialised inpatient care for patients requiring the direction or supervision of a physician [21]. There was no language restriction.

Exclusion criteria

Studies in intermediate care, sub-acute, rehabilitation or long-term facilities and those reported prior to 2000 were excluded. Animal studies and studies of subjects suffering exclusively from stroke or a non-general medical condition (e.g. surgery) were also excluded.

Electronic databases (CINAHL, AMED, EMBASE, MEDLINE, Cochrane and Pubmed) were searched from January 2000 time to April 2014. Searches of grey literature included Google, Google scholar, the British Library Electronic Thesis on line Service, the Department of Health website and NHS websites. Supplementary searches included reference and citation tracking and contacting authors of eligible trials.

Search results

A total of 571 studies were identified through the initial search. The titles and abstracts of all papers were reviewed and those that did not meet the inclusion criteria were discarded. Fifteen full text papers were included (Tables 1-4). Eleven studies included PAI as the only intervention (uni-intervention trials) whilst four studies described PAI as part of composite programme of interventions. Data were extracted against pre-defined categories and quality assessed using standards for reporting study designs; the Consolidated Standards of Reporting Trials
(CONSORT) [22] and STROBE guidelines for reporting observational studies [23] as appropriate. We examined key components of the studies in terms of intervention, sampling, outcome measures and theoretical underpinnings. In addition intervention components were evaluated to understand what PAI were offered to hospitalised older adults and how and in what circumstances PAI might be of benefit in older medical patients.

Eight of the studies were based in Australia, three in the North Americas and one each in France, UK, New Zealand and Belgium.

Aims of the studies

The primary aims of the studies related to investigating the effect of additional PAI alone or as part of a multi-intervention programme on a variety of outcome measures; muscle strength [24, 25], functional ability [26-29] [26-28], hospital length of stay [19, 30-32], falls [33] and incident delirium [34, 35].
<table>
<thead>
<tr>
<th>Author, date of publication</th>
<th>Design and country</th>
<th>Intervention</th>
<th>Sample</th>
<th>Exclusion criteria</th>
<th>Outcomes assessed</th>
<th>Effects found</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blanc-Bisson (2008)</td>
<td>RCT France</td>
<td>Early physiotherapy exercise programme started 1-2 days post admission</td>
<td>Hospitalised patients &gt; 70 years, m=76, C=38, I=38</td>
<td>Not independent in walking within previous 3 months, Neuro-muscular disease affecting lower limbs, Chronic/ respiratory impairment, Severe heart failure, Peripheral vascular disease, Palliative care, Pharmacy known to impair muscle function</td>
<td>ADL (Katz) Handgrip strength</td>
<td>Improvement in ADL was found in intervention group when the model was adjusted on function factor items.</td>
</tr>
<tr>
<td>Brusco (2007)</td>
<td>RCT Australia</td>
<td>Usual care (Monday-Friday) + additional 1 hour of physiotherapy intervention/week provided on a Saturday</td>
<td>Hospitalised patients &gt; 70 years, m=264, C=132, I=132</td>
<td>Cognitive impairment, Specialized geriatric evaluation and management, Non-English speaking</td>
<td>Hospital LOS, Physiotherapy LOS, Independence (FIM), Activity (FRT/TUG/10mWT), Flexibility (Hypermus ROM), Strength, Discharge destination, Adverse events (fall/infection/mortality)</td>
<td>No significant between group difference in mean hospital LOS of 3.2 days (p=0.09), No significant between group difference in mean physiotherapy LOS of 2.5 days (p=0.15). No significant between group difference in secondary outcomes</td>
</tr>
<tr>
<td>Cardiff and Vale Healthcare (2010)</td>
<td>Service evaluation UK</td>
<td>Usual care + extended day and 7-day working physiotherapy service</td>
<td>Hospitalised older medical patients, m=Not reported, LOS: Not reported</td>
<td>Not reported</td>
<td>Hospital LOS</td>
<td>Bed days were reduced by 1.5 per patient. Physiotherapy response times from referral to contact improved from an average of 13.7 hours to 2.3 hours.</td>
</tr>
<tr>
<td>de Mortain 2007</td>
<td>CCT Australia</td>
<td>Usual care + one of 4 levels of additional exercise</td>
<td>Adverse medical admission, m=187, C=87, I=90</td>
<td>Medically unwell, Non-ambulating, Nursing home resident, Nursing home level care Palliative</td>
<td>Discharge destination (Function (FRT/TUG/FAC), LOS, Adverse events (readmission, falls, mortality, ICU admission))</td>
<td>No significant effect of the additional exercise programme on any outcomes. Between group difference in LOS 5.0 days (3.0-9.75) vs 6.0 days (3.25 to 9.75) (p=0.45)</td>
</tr>
</tbody>
</table>

Table 1: Uni-intervention study characteristics
<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention Description</th>
<th>Dose of Intervention</th>
<th>Acute medical Admission</th>
<th>Cognitive Impairment</th>
<th>Function (mBI*)</th>
<th>Adverse events</th>
<th>Feasibility</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jones (2006)</td>
<td>Usual care + one of 4 levels of additional exercise</td>
<td>Acute medical ≥ 65</td>
<td>Cognitive impairment</td>
<td>Medically unwell</td>
<td>Nursing home resident</td>
<td>LOS</td>
<td>Interventions had a shorter LOS</td>
<td>Lower LOS in the intervention group</td>
</tr>
<tr>
<td>RCT Australia</td>
<td>Dose of intervention: x2/day. Total intervention 160 minutes (125-300)</td>
<td>n=160</td>
<td>C=80</td>
<td>I=80</td>
<td>LOS: 8 days (4-12)</td>
<td>Cognitive impairment</td>
<td>Total LOS 2 days (p=0.097) but after adjusting for confounding variables HR 1.46 (95% CI 1.04-2.05) p=0.026</td>
<td>No significant between group differences in other outcomes</td>
</tr>
<tr>
<td>Killey (2006)</td>
<td>Usual care + nurse supervised/disassisted walk</td>
<td>Acute medical ≥ 70</td>
<td>Cardio-respiratory morbidity</td>
<td>Significant between group differences in distance walked and BI</td>
<td>Self-efficacy scale</td>
<td>Significant between group differences in distance walked and BI</td>
<td>Significant between group differences in BI; difference between sample means 15.83 (p=0.03)</td>
<td></td>
</tr>
<tr>
<td>CCT Australia</td>
<td>Dose of intervention: x2/day, 7-days/week</td>
<td>n=55</td>
<td>C=28</td>
<td>I=27</td>
<td>LOS: not stated</td>
<td>Self-efficacy scale</td>
<td>The data obtained from the self-efficacy scale were skewed and no conclusions could be drawn</td>
<td></td>
</tr>
<tr>
<td>Latham (2001)</td>
<td>Usual care + progressive resistance exercise programme</td>
<td>Acute medical ≥ 65</td>
<td>Cognitive impairment</td>
<td>Leg ulcers</td>
<td>Limited knee extension</td>
<td>Balance (BBT)</td>
<td>Change in intervention vs control (SD): Balance (5.3 (3.4) vs 2.9 (5.1); difference 2.4; 95% CI -7.4 to 13.8)</td>
<td>Adherence – proportion of participants completing &gt;75% participation</td>
</tr>
<tr>
<td>RCT New Zealand</td>
<td>Dose of intervention: x1/day, 5-days/week</td>
<td>n=10</td>
<td>C=10</td>
<td>I=10</td>
<td>LOS: 1.7 weeks</td>
<td>Self-efficacy scale</td>
<td>Resistance exercise can be successfully performed shortly after hospitalisation</td>
<td></td>
</tr>
<tr>
<td>Mallery (2003)</td>
<td>Usual care + resisted exercise programme</td>
<td>Acute medical ≥ 70</td>
<td>Cardio-respiratory morbidity</td>
<td>Fracture (recent)</td>
<td>Musculo-skeletal condition</td>
<td>Quadriceps strength</td>
<td>Participation and adherence: Intervention grp: 71% and 63% vs Control: 96% and 95%</td>
<td></td>
</tr>
<tr>
<td>RCT Canada</td>
<td>Dose of intervention: 36.2 minutes (4.8), x1/day, 3x/week</td>
<td>n=20</td>
<td>C=10</td>
<td>I=10</td>
<td>LOS: Not stated</td>
<td>Quadriceps strength</td>
<td>Resistance exercise can be successfully performed shortly after hospitalisation</td>
<td></td>
</tr>
<tr>
<td>Nolan (2006)</td>
<td>Usual care + tailored functional maintenance plan (exercises +/- functional walking)</td>
<td>Acute medical ≥ 70</td>
<td>Cognitive impairment (severe)</td>
<td>Nursing home resident</td>
<td>Non-ambulating</td>
<td>Function (EMS)</td>
<td>Feasibility of exercise programme was supported; High uptake (89%), low withdrawal (17%) compliance (70%)</td>
<td></td>
</tr>
<tr>
<td>CCT Australia</td>
<td>Dose of intervention: x1/day, 6-days/week</td>
<td>n=220</td>
<td>C=84</td>
<td>I=196</td>
<td>LOS: 10.01 days (7.88)</td>
<td>Cognitive impairment (mBI)</td>
<td>Feasibility of exercise programme was supported; High uptake (89%), low withdrawal (17%) compliance (70%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Uni-intervention study characteristics
<table>
<thead>
<tr>
<th>Table 3: Uni-intervention study characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Siebens (2000)</strong></td>
</tr>
<tr>
<td>RCT</td>
</tr>
<tr>
<td>USA</td>
</tr>
<tr>
<td><strong>Troosters 2010</strong></td>
</tr>
<tr>
<td>RCT</td>
</tr>
<tr>
<td>Belgium</td>
</tr>
<tr>
<td><strong>Management of Patients with Acute Respiratory &lt; 85</strong></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

*primary outcome(s)

| C – control | CI – confidence interval |
| I – intervention | CO – controlled clinical trial |
| 10MWT – 10 metre walk test | EMS – Elderly mobility scale |
| 6MW – 6 minute walk test | FAC – functional ambulation classification |
| ADL – Activities of Daily Living | FIM – functional independence measure |
| ALS – Ambulation to motor scale | FRT – functional reach test |
| BBT – Berg balance test | HR – Hazard ratio |
| IADL – instrumental activities of daily living | LOS – hospital length of stay |
| BI – Barthel index | INTU – intensive care unit |
| LOS – hospital length of stay | mBI – modified Barthel index |
| OR – Odds ratio | RCT – randomised controlled trial |
| ROM – Range of Movement | TUG – Timed up and go |

Table 3: Uni-intervention study characteristics
<table>
<thead>
<tr>
<th>Author, date design and country</th>
<th>Intervention</th>
<th>Sample</th>
<th>Exclusion criteria</th>
<th>Outcomes assessed</th>
<th>Effects Found</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumming (2008) RCT Australia</td>
<td>Usual care + additional exercises, mobility practice and individualised falls prevention interventions. Dose of exercise intervention not stated Usual care: No trial interventions</td>
<td>Acute older adults ≥ 65 n=3969 C=1952 I=2047 LOS: Not stated</td>
<td>None</td>
<td>Falls*</td>
<td>No significant between group difference in falls rate</td>
</tr>
<tr>
<td>Inouye (2003) Clinical cohort study USA</td>
<td>Usual care + delirium prevention interventions including mobilisation and active exercises Dose of exercise intervention: 3x/day</td>
<td>Acute older adults ≥ 70 n=422</td>
<td>No delirium on admission Intermediate risk of delirium on admission Profound aphasia Intubation/coma Palliative</td>
<td>New onset delirium*</td>
<td>Delirium rates were lower when adherence was higher for mobility protocol Incidence of delirium: 14% in low adherence group and 3% in high adherence group (p=0.002)</td>
</tr>
<tr>
<td>Jeffs (2013) RCT Australia</td>
<td>Usual care + progressive resistance exercises and supervised walking + orientation interventions Dose of exercise intervention: 2x/day, 5-days/week, 38 minutes (25-52) Usual care: Allied health input on referral.</td>
<td>Acute older adults ≥ 65 n=648 C=343 I=305 LOS: 5.5 (3.9-9.2)</td>
<td>Dysphasia (severe) Cognitive impairment Admission to ICU/CCU Isolation for infection control Contraindication to mobilisation</td>
<td>Delirium (CAM*) Duration/severity of delirium LOS Discharge destination</td>
<td>No significant between group difference in outcomes</td>
</tr>
<tr>
<td>Mudge (2008) CCT Australia</td>
<td>Usual care + graduated exercise programme + education programme + cognitive intervention Dose of exercise intervention: physiotherapy review daily Usual Care: Allied health input on referral (83.2% of participants)</td>
<td>Acute older adults ≥ 65 n=124 C=62 I=62 LOS: 10 (6.75-13)</td>
<td>Fully dependent NH resident Medically unstable Palliative</td>
<td>Function (mBI*) Change in delirium LOS Falls Activity on the ward (observation) Discharge destination and readmission</td>
<td>Significant between group difference in median mBI 8.5 vs 3.5 (p=0.03) and incident delirium 19.4% vs 35.5% (p=0.04) No significant between group difference in other outcomes</td>
</tr>
</tbody>
</table>

*primary outcome(s), C=Control, I=Intervention, CAM - Confusion Assessment Method, LOS – hospital length of stay, mBI – modified Barthel index, RCT – randomised controlled trial, CCT – controlled clinical trial.
Study Designs

A plurality of study designs was revealed by the search randomised controlled trials (n=7), controlled clinical trials (n=4), clinical cohort study (n=1) and a service evaluation (n=1). Understandably when undertaking studies in naturalistic settings, designs were pragmatic. Identification of theoretical basis for studies or outcomes of PAI was absent for all studies.

Thirteen of the studies compared one or more forms of intervention with usual care; the remaining two studies were a non-comparative, descriptive study [34] and a comparison of two forms of an intervention without reference to usual care [36]. Intervention designs were diverse regarding mode (exercise, walking practice), frequency (days/week or interventions/day), duration (hours/day) and intensity (repetitions, resistance or distance). Multi-intervention studies combined PAI with a variety of other non-physical activity interventions. Description of the intervention was inconsistent and generally more detailed in the uni-intervention studies than the multi-intervention studies.

All studies provided a power analysis in relation to their sample size with two exceptions [31, 37]. Nine studies had large sample sizes (n=62-2047) and five smaller samples (n=10-38) [24-26, 28, 36]. Three studies failed to reach the required sample size [29, 30, 35]. There was no adjustment of the alpha level in any studies that contained (n≤20) and therefore these results should be treated with caution.

A detailed description of participant characteristics was included in all studies with one exception [25]. The heterogeneous nature of the population samples regarding co-morbidities including cognitive status and functional ability provide useful context in which to interpret the findings. Unfortunately these factors were also used as exclusion criteria in several studies. The majority of study populations, therefore, are
reflective of the methodological limitations of study design and attempts to control variability means that study populations rarely reflect the populations experienced in delivering healthcare interventions.

There was a consistent gap detailing description of any PAI in the control/usual care groups. The intervention, in particular what if any physiotherapy was received, in the usual care groups was poorly described making interpretation of outcomes difficult. Only one study reported the exclusion of any PAI in the control group, this study also reported a significant impact of the intervention on the primary outcomes, quadriceps strength [25].

**Amount of intervention**

Amount of intervention was determined by frequency, duration and in most studies hospital LOS. Frequency was defined as number of sessions per day (range 1-2) and number of days per week (5-days to 7-days). Duration referred to the length of a session (range 10-30 minutes). Total duration was determined by LOS, which ranged from 5 days to 21.2 days. Duration of intervention in one study was pre-determined at 7-days [25] and four studies failed to state LOS or duration of intervention [26, 33, 34, 36]. The study reporting the longest LOS during which participants received 1 hour of physiotherapy per day 6-days a week showed no significant differences between the intervention and usual care groups in LOS or health status measures [30]. All three studies that provided intervention 7-days a week reported significant differences between intervention and usual care groups in primary outcomes; distances walked [28], quadriceps force [25] and hospital LOS [31].

Given the plurality of factors determining amount of PAI it was unsurprising to find that total PAI received by the intervention groups varied although the amount of
additional intervention, over and above usual care PAI was inconsistently reported. Four studies reported amount of intervention over and above usual care in the range of an additional 20-40 minutes of intervention per day [19, 27, 35, 36]. Brusco and Paratz reported an additional 4.1 interventions [30]. These studies did not show superior outcomes.

Low adherence with intervention protocols influenced total amount of PAI and may have affected study outcomes. Adherence with protocols ranged from 50-70% [27, 29].

**Intervention intensity**

Provision of exercise interventions varied considerably between studies in terms of number of exercises (range 1-12), number of repetitions (range 5-12), number of sets (range 1-3). Not all parameters were specified in all papers, detail was also minimal where intensity was increased over the course of the studies. Intensity of exercise may be important in relation to outcomes. This was highlighted in one study that reported that the exercise programme might not have been sufficiently challenging to impact on the measures chosen [32].

**Timing of commencement of the intervention**

The time to intervention commencement post admission was also inconsistent across studies; Four studies failed to state the time to first intervention [24, 25, 28, 30, 34]. Time to first intervention has a correlation with the total amount of PAI received by participants and is important information with which to interpret study findings.
Delivery of intervention

PAI intervention was supervised by a qualified physiotherapist [25, 29, 30, 33, 36], unqualified physiotherapy assistant [19, 27, 32, 35, 37], nurse [28] or other trained assistant [34]; one paper did not specify the personnel involved [24]. Detail was lacking regarding the number of staff delivering the intervention or whether additional staff were provided [30]. Importantly the number of staff involved in provision of usual care was not detailed, nor the criteria for which patients in the usual care group would or would not receive physiotherapy or other PAI. Importantly one group examined the impact of an extended day and 7-day working physiotherapy service in acute medicine and employed an additional six specialist physiotherapists and reported a decrease in the physiotherapy mean response time (referral to contact) from 13.7 to 2.3 hours and a reduction in bed days of 1.5 per patient [31].

Staffing resource is an important context to consider in relation to how it may influence outcomes for example, appropriate progression of intervention intensity may be influenced by type and seniority of staff although the literature regarding influence of profession or grade of staff assessing and delivering PAI is minimal [38]. Intervention was delivered in individual one-to-one sessions in the majority of studies. Two studies utilised a combination of group and individual sessions [30, 33] and mode of delivery was not stated in one study [31]; most PAI were delivered in the ward environment reflecting clinical practice.

Outcome Measures

Outcomes in the studies related to organisational operational and patient health status measures. Organisational operational measures included measures of LOS and discharge destination and patient health status measures included adverse
outcomes and measures of physical or functional ability, participation, adherence and incidence of delirium.

LOS was included as an outcome measure in 7 studies [19, 27, 32, 37, 39] [29, 35]. In one uni-intervention study the intervention group had a non-significant shorter LOS, however, when LOS was adjusted for confounding factors the effect became significant [27]. One study reported the average LOS was greater in the intervention group than the control group although this also did not reach significance [32]. The other studies identified a shorter LOS but this did not reach significance. However, mean LOS was relatively short in some studies (5.5-10 days), which may have influenced the potential for impact of the intervention [19, 25, 27, 29, 34, 37].

LOS is an omnipresent measure in acute healthcare intervention due to the direct correlation of the measure to cost, which makes it an attractive outcome measure to organisations [30]. However, the plurality of factors that influence LOS are acknowledged [40] and this may provide some explanation for the variation seen in outcomes. Of interest in one study was the inclusion of physiotherapy as well as hospital LOS [30]. Results showed that this was on average 2.3 days less than hospital LOS in the intervention group, providing support for the argument that impact on LOS is multi-factorial and not influenced unprofessionally.

Discharge destination was included in 2 studies and defined as home with or without various levels of support; sub-acute care/rehabilitation hospital, nursing home, supported accommodation or other measures [19, 27]. No significant impact on discharge destination was revealed in either study although after adjusting for confounding factors.
Two studies included follow up measures post discharge, 1-month follow-up no intervention [25] and 1-month post-discharge exercise programme [32]. The former study reported that participants maintained improvement in quadriceps force at 1 month follow up but 6-minute walking distance was not significantly different from the usual care group [25]. The latter reported that intervention was associated with better functional outcomes at 1-month follow up [32].

Adverse events in studies were described variously as readmissions within a defined time period [19, 27, 37], falls [19, 27], mortality [19, 32], critical care admission [19, 27], injuries [24] or development of delirium [34, 35]. These measures are affected by a multitude of factors. For example, the factors acknowledged to contribute to falls include gait instability, agitated confusion, urinary incontinence/frequency, falls history and the prescription of sedative/hypnotic drugs [41]. Number of falls was an outcome in two studies [29, 33]. Despite vastly different sample sizes no significant difference in falls rates between groups was reported in either study.

A number of studies failed to complete all measurements for a large proportion of patients originally included in each of the study arms. An inability to perform intention-to-treat analyses due to the nature of the patient withdrawals is likely to reduce the internal validity of the findings and power to detect differences [24, 25].

Two studies investigated the impact of strength training interventions. They specifically assessed quadriceps function as an outcome in terms of strength and force [25, 42] respectively. Both studies reported significant differences between groups for these outcomes. There was consistency in the interventions although load and duration of intervention were inconsistent between studies.
There was no significant difference in secondary measures of activity despite the significant change in muscle strength reported. This suggests that age is not a barrier to such improvement and also, given the differing regimes, raises more questions regarding dose of exercise achieves a clinically significant outcome. There must also be consideration of whether increase in strength is practically useful to the patient in light of studies’ secondary outcomes. The authors did not attempt to suggest why the changes observed might have occurred but their results suggest that changes to quadriceps strength and force are possible even during short courses of rehabilitation.

As expected there were a wide variety of measures used to capture patient functional outcomes. Outcome measures related to function have reported ceiling and floor effects, which may have influenced study results. The elderly mobility scale [28] and original and modified Barthel index [19, 27-29] have acknowledged ceiling effects [43, 44]. The Timed Up and Go Test (TUG) showed a floor effect in two trials [19, 27]. There is also a paucity of validated functional measures sensitive enough to capture functional change over short periods of time [24].

Most studies reported that there were no significant differences in measures of functional ability between groups post intervention with two exceptions; Killey et al. (2006) reported a significant increase in distance walked and functional independence (Barthel index) between groups. A small but significant change in functional status (modified Barthel index) in the intervention group was reported by Mudge et al. [29], importantly neither of these studies reported the total amount of intervention received. Siebens et al. (2000) reported that intervention was associated with better function in IADL at 1 month but no attempt was made to investigate physical activity levels of participants on discharge.
Patient reported outcome measures (PROMs) were rare, one study included a self-efficacy PROM [28] but unfortunately, the self-efficacy tool selected was not validated in the study population, making meaningful interpretation impossible.

What we have learned

It is well documented that older patients hospitalised with acute illness exist on a trajectory of declining functional ability, which may continue during hospitalisation [10]. Although it is established that the physiology of older adults is sensitive to active exercise [45], data has in the most part been obtained from participants who are community dwelling and following several months of intervention. These effects may be more unlikely in an acute hospitalised older adult population, average LOS of stay 13 days [3], yet short courses of rehabilitation (average LOS 5.5 days) have reportedly impacted on functional outcomes such as gait velocity [46].

This review sought to illuminate the impact of PAI to acutely unwell older adults in particular whether, why and how the interventions might work. The literature search resulted in a number of empirical studies; those related to exercise intervention only and those, which investigate a multi-faceted intervention that included exercise. The multi-intervention studies add little to the knowledge specifically regarding the impact of PAI in medically unwell older adults since the inclusion of multiple interventions makes it difficult to assess whether findings are due to individual components or the interaction of the components. The literature did not allow either the establishment of consistencies regarding the impact of PAI in hospitals or the identification of a possible theoretical basis regarding how PAI might impact on outcomes.

The studies span a number of years (2000-2014) and are of variable quality, overall outcomes are conflicting; differing healthcare systems, populations, interventions and
evaluation measures are resultant in a challenge to determine outcome consistency across studies. The majority report no significant effects of intervention, which could be resultant of multiple factors. The studies, do not present a theoretical base, this is not revealing as many areas of physiotherapy and rehabilitation are underdeveloped from a theoretical perspective [47]. Some key contextual factors were however highlighted.

The detail of service provision in terms of staffing to both the intervention and usual care groups are variously described and qualified in physical activity delivery inconsistent. However, results from some studies suggest that there may be an association between staffing resource and outcomes; studies reporting an investment in staffing reported more positive impact on outcomes [30, 31]. PAI is inconsistently quantified in terms of type, frequency, duration and intensity and there are no studies seeking to correlate PAI with outcomes. Although this has been reported in studies of stroke patients and patients with chronic lung disease [48, 49].

Patients are considered as a homogenous group in studies but the varied exclusion criteria and inconsistent outcomes intimate that the heterogeneous nature of hospitalised older adults is important. Two studies have attempted to stratify patients by admission functional ability [19, 27] and report that outcomes were affected in terms of this domain. These two studies suggest that patient presentation may affect the impact of exercise interventions but not why this might be.

**Clinical Implications**

In summary, we conclude that there is lack of clarity as to whether and why PAI impacts on acutely unwell older adults therefore options for service development or improvement based on study findings are limited. This is unhelpful at the service
level where there is a need to develop more productive services. An increased level of understanding of how physiotherapy interventions impact on acutely unwell older adults in order to optimise intervention for individual patients is urgently required. In addition, the impact of service (days and staffing resource) and patient presentation, such as frailty and cognitive impairment populations, on outcomes and the association between amount of intervention and outcomes need to be considered and provide rationale for further study into physiotherapy interventions.

The conflicting findings of similar study designs in the literature would not appear to support the continual repetition of similar study designs with the aim of identifying the impact of physical intervention including physiotherapy to acutely unwell older adults.

Acknowledgements

We’d like to thank Gareth Jones and Leyla Osman for proof reading the document and for their useful comments. Guys and St Thomas’ NHS Foundation trust for the time to undertake this review.
References


37. Nolan, J. and S. Thomas, Targeted individual exercise programmes for older medical patients are feasible, and may change hospital and patient outcomes: a service improvement project. BMC Health Serv Res, 2008. 8: p. 250.
Evidence of submission

Age and Ageing AA-14-0737

To: Jones Jacky

20 November 2014 11:42

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Dear Mrs. Jones,

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Thank you very much for sending your paper to Age and Ageing. In all future correspondence relating to your manuscript would you kindly quote the reference number above.

The manuscript has been forwarded to the editor who will send it out to two or three referees if appropriate. You will be contacted as soon as a decision has been reached. The final decision will take into account both the merit of the paper and its priority in competition with other submissions to the journal.

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With best wishes.

Yours sincerely,

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Age and Ageing

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Power, Politics and Policy Module Assignment

A Policy Analysis of A High Quality Workforce: NHS Next Stage Review

Introduction

This policy analysis reviews A High Quality Workforce: NHS Next Stage Review (AHQW) (Department of Health [DH] 2008a). The policy (appendix 1) provided the detail regarding plans for the NHS workforce referred to as part of the NHS Next Stage Review and in particular the final report: High Quality Care for All (HQCFA) (DH 2008b).

The primary focus of this analysis will be from the perspective of physiotherapy within the Allied Health Professionals (AHPs) collective, but will include aspects from the nursing profession. Differences exist between nursing and AHPs in terms of training and practice but there are similarities. They can be described as nascent professions that have sought professionalization within a health environment dominated by the medical profession. It is therefore valid to draw parallels from nursing literature to AHPs where no AHPs literature exists.

AHPs are described in AHQW (DH 2008a) as a diverse group of clinicians delivering care across a wide range of pathways in multiple settings. Occupations encompassed in the AHP umbrella in 2008 are detailed in table 5 and since 2001 have been regulated by the Health Professions Council (HPC).
Table 5: Professions covered by the title AHP and numbers of registrants (HPC website 2011)

<table>
<thead>
<tr>
<th>Profession</th>
<th>Registrants</th>
<th>Profession</th>
<th>Registrants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts therapists</td>
<td>2,880</td>
<td>Orthotists/Prosthetists</td>
<td>901</td>
</tr>
<tr>
<td>Biomedical Scientists</td>
<td>22,604</td>
<td>Orthoptists</td>
<td>1,301</td>
</tr>
<tr>
<td>Chiropodists/Podiatrists</td>
<td>12,716</td>
<td>Paramedics¹</td>
<td>16,693</td>
</tr>
<tr>
<td>Clinical Scientists</td>
<td>4,597</td>
<td>Physiotherapists</td>
<td>44,926</td>
</tr>
<tr>
<td>Dieticians</td>
<td>7,299</td>
<td>Practitioner Psychologists</td>
<td>17,094</td>
</tr>
<tr>
<td>Hearing Aid Dispensers</td>
<td>1,583</td>
<td>Radiographers</td>
<td>26,544</td>
</tr>
<tr>
<td>Occupational therapists</td>
<td>31,998</td>
<td>Speech and Language</td>
<td>13,064</td>
</tr>
<tr>
<td>Operating Department</td>
<td>10,292</td>
<td>Therapists</td>
<td></td>
</tr>
</tbody>
</table>

By contrast the number of doctors and nurses in 2011 were 245,026 (GMC website 2011) and 660,000 (NMC website 2011) respectively.

The historical context and processes influencing the policy AHQW (DH 2008a) are complex. This paper will seek to utilise an established health analysis policy tool to examine the influences and influencers of the policy from the perspective of the AHPs. It will also argue that health policy is inherently linked to the established power of the medical profession who continue to impact at the macro and micro level on workforce planning, education and roles of health care staff.

**Health policy and health policy analysis**

Policy as a concept has neither the specificity nor robustness required for it to be definitively defined (Crinson 2009). This complexity poses challenges for its study. The definition provided by Buse *et al.* (2005) that the formation of health policy relates to courses of action or inaction that affect the health system, was differentiated further by Walt *et al.* (2008). They suggested that the status of health professionals, the health care market and the values held by people regarding health

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¹ Not included in AHQW (DH 2008a) review.
constituted the health sector’s three unique characteristics. These they argue affect the development of health policy and thus differentiate it from other state policy.

Health policy analysis is an important undertaking to inform new health policy and is central to health reforms (Walt and Gilson 1994). There are an increasing number of policy analysis tools/frameworks with which to scrutinise health policies both retrospectively and prospectively. As is often the case though, plurality of analysis tools correlates with the complexity of the themes the tools set out to analyse.

Following review of a number of policy analysis tools (Bowen and Zwi 2005, Cheung 2010, Collins 2005 and Patton and Sawicki 1986), Walt and Gilson’s policy analysis framework (1994) (Figure 1) was selected to facilitate analysis of AHQW (2008a).

Figure 1: A model for health policy analysis
Walt and Gilson (1994)

This framework was developed specifically for health policy analysis and, crucially, is non-linear reflecting the complexity of policy formation within the NHS (Ham 2009).
Walt and Gilson (1994) acknowledge their model infers that each of the inter-relationships be considered independent of the others. However, descriptions of the application of their framework provide clarity that this is not their intention (Walt and Gilson 1994). This acknowledgement is important, rationalist models for policy analysis have been described as naive in not giving due consideration to the use of rhetoric in the context of discourse during the policy process (Russell et al., 2007). The Walt and Gilson (1994) framework sets the analysis in the political arena where such discourse between stakeholders occurs. Whilst not explicitly illustrated, the Walt and Gilson (1994) framework is multi-dimensional enough to render policy analysis at the macro level of policy formation, and at the micro level of organisational implementation.

It is a robust model allowing use of supplementary policy analysis tools to facilitate in-depth enquiry. For example, to further investigate the process aspect of policy formation, the ‘stages heuristic’ approach (Sabatier and Jenkins-Smith cited in Buse 2005) is useful. It allows understanding of policy process by delineating it into a series of stages; problem identification, policy formation, policy implementation and policy evaluation.

Similarly, in reviewing the actors the framework facilitates additional stakeholder analyses, for example:

- Identifying the policy actors
- Assessing their political resources
- Understanding their position and interests with respect to the issues

(Roberts et al. cited in Buse et al., 2005, page 177)

In conclusion this adaptable framework’s purpose is to engender review of the complex interactions, which encompass health policy throughout the NHS hierarchy.
Content – description of the policy

The content of AHQW (2008a) (appendix 1) is assembled in 4 distinct sections table 6 highlights the significant content of each section.

Table 6: Key content of AHQW (DH 2008a) by section

<table>
<thead>
<tr>
<th>Section</th>
<th>Significant content</th>
</tr>
</thead>
</table>
| Tomorrow’s Clinicians          | Articulates the vision regarding expectations of all clinicians regardless of profession/speciality  
Clinicians will be expected to be practitioner, partner and leader                                                                                     |
| Roles, education and training pathways | Describes the vision for roles by profession/group of professions  
Roles, education and career pathways must be focused on quality, patient centred, clinically driven, flexible, valuing people, promote life-long learning                                                                 |
| A System Fit to Deliver        | Describes the planned improvements to workforce planning, education and training including the creation of a number of regional and national bodies to oversee this work  
Proposes to improve the transparency and equity of education funding.  
Commits to the regulation of all healthcare professions                                                                                               |
| Appendix                       | Explains how the policy document addresses the recommendations of the Modernising Medical Careers (MMC) inquiry (2004)                                                                                        |

AHQW (DH 2008a) articulates the expectation that services will no longer be provided within professional silos, a similar vision had been suggested in previous policies. Firstly, in Agenda for Change (AfC) (1999) and the Knowledge and Skills Framework (KSF) (2004b) the vision had been led by macro level stakeholders. AHQW (DH 2008a) infers that the drive to alter professional focus came from the micro level; the clinicians themselves. Secondly, HQCFA (DH 2008b) had introduced the practitioner/partner/leader triad of roles that are clarified in this policy. Practitioner and leader were familiar terminology, albeit ambiguous and dependent on profession. Partner, with respect to healthcare professionals, was new language and signposted the government’s intention to decentralise responsibility and accountability for services to the frontline clinical staff.
However, section 2 of AHQW (DH 2008a) offers evidence that despite the political rhetoric, the medical profession would continue to assume a role at the top of the professional hierarchy. The medical profession are addressed firstly and most comprehensively of the all the healthcare occupations. AHQW (DH 2008a) proposes that consensus on the role of the doctor and the nurse is a priority. Distinctive features of expert medical practitioners and core skills of all doctors are detailed in the policy (Table 7).

Table 7: Distinctive features and core skills of expert medical practitioners

<table>
<thead>
<tr>
<th>Distinctive features</th>
<th>Core skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieve accurate and timely diagnosis</td>
<td>Leadership</td>
</tr>
<tr>
<td>Ensure the safety of patients</td>
<td>Dealing with complexity and managing uncertainty</td>
</tr>
<tr>
<td>Help patients navigate healthcare pathways</td>
<td>Effective and efficient problem solving</td>
</tr>
<tr>
<td>A leader or partner of a clinical team</td>
<td>Working with patients to take legitimate risks and to manage that risk</td>
</tr>
<tr>
<td>Contribute to healthcare research, development and innovation</td>
<td>Grasping clinical situations intuitively based on a deep and tacit understanding of their area of practice</td>
</tr>
<tr>
<td>Train future healthcare professionals</td>
<td></td>
</tr>
</tbody>
</table>

Arguably these features and skills are necessary for all experts within healthcare and are not limited to the medical profession. With respect to AHPs the policy proposes the continuing development of an interconnected resource of professional roles and a related framework of competencies.

Success of the planned improvements to workforce planning, education and training is ascribed to that which is managed locally and assured nationally. Inherently linked with this vision is a re-basement of the historical funding arrangements for education; the Multi-Professional Education and Training (MPET) levy, allocated by the DH and
managed by the Strategic Health Authorities (SHA) The funding was based on 3 historic components detailed in table 8.

Table 8: Detail of MPET funding

<table>
<thead>
<tr>
<th>Component of MPET</th>
<th>Staff group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Medical Education and Training (NMET)</td>
<td>Pre and post registration non-medical staff</td>
</tr>
<tr>
<td>Service Increment for Teaching (SIFT)</td>
<td>Undergraduate medical and dental placements</td>
</tr>
<tr>
<td>Medical and Dental Education Levy (MADEL)</td>
<td>Postgraduate medical and dental training</td>
</tr>
</tbody>
</table>

The funding was neither transparent nor equitable (Thompson 2009). With AHQW (DH 2008a) the government articulated the intent to provide transparency and equality to education funding across the healthcare professions but neglected to detail how and when this would occur. The appendix of the document provides some insight into one of the main drivers for the policy content; Modernising Medical Careers (MMC) (DH 2004a). To consider MMC (DH 2004a), AHQW (DH 2008a) must be contextualised at this point in the analysis through review of the political and historical perspective in which the policy developed.

Context – the political landscape

The period from the end of the Thatcher government to the publication of AHQW (DH 2008a) was a time of great change in the NHS; figure 2 provides detail of policy documents related to workforce produced during this time. This neo- liberalist period saw devolved accountability for clinicians and managers and a shift to patient centred care as the state vision for the NHS become less centralised. But this period also witnessed an actual increase in central control through central regulation of
professions. This divergent approach continued in AHQW (DH 2008a) and created tensions.

The changes of this period provided impetus that challenged the traditional roles of the workforce; planning for the health professions became linked through a number of factors. In 1991 the Conservative government attempted to reduce the junior doctor’s hours of work, the policy guidance Hours of Working Doctors in Training (DH 1991) suggested that utilising the skills of nurses and AHPs could assist that objective. Concurrently, the medical profession were experiencing the impact of increasing number of female doctors and early retirement of existing consultants leading to workforce shortages (Dowie & Langman 1999).

The White Paper: The New NHS Modern and Dependable (DH 1997) and The NHS Plan (DH 2000) signalled the newly elected Blair government’s desire to reconfigure professional roles. Notwithstanding this egalitarian vision for healthcare clinicians, Ham (2009) argues that the Blair Government continued to promote the medical profession through the appointment of a number of senior doctors to the DH as National Clinical Directors or ‘tsars’ (page 183). Despite the opportunities offered by government policy, 1990’s workforce planning and education across professions was not integrated (Dowie & Langham 1999).

Wider European politics also influenced policy at this time. The European Working Time Directive (EWTD) (Council Direction 93/104/EC 1993) and subsequent legal judgements (Judgement of 13 November 1996) had a profound impact on the medical profession compelling a review of medical staff working patterns and postgraduate training in order to comply with the directive.
These multiple factors resulted in the MMC initiative in 200, intended to undertake a radical review of doctors training. MMC (DH 2004a) was criticised heavily by the medical profession in general for a lack of understanding, clarity and implementation of processes that were perceived to be ill-considered (Delamonthe 2007). The protests from the medical profession resulted in the independent inquiry Aspiring to Excellence (2007) which strongly influenced the policy AHQW (DH 2008a) as evidenced by the appendix of the latter document.

Finally, this period also witnessed significant activity within the AHP and nursing professions as they sought to advance their professionalization agenda. Cameron and Masterson in Davies (2005) suggest that there was therefore an element of ‘serendipity’ in terms of the relationship between health policy, reconfiguration and non-medical professional advancement (page 73).

In summary at the macro level, consecutive health policy and legislation suggested that work traditionally undertaken by the medical profession could and should be undertaken by non-medical professions as partners in the management of patients. Additionally, workforce planning and education should be more closely linked in terms of both provision and funding arrangements.
The Influence of Actors on Policy

The political landscape described above in which AHQW (DH 2008a) developed was significantly influenced by the actors which are contemporaneously analysed using the framework. Table 9 provides a summary of the actors in AHQW (DH 2008a).
The stakeholders are identified as either drivers or resistors of AHQW (DH 2008a) at the macro and micro level together with an assessment of the power associated with each stakeholder, recognising that any assessment of power is ‘value-dependent’ (Crinson 2009 page 14). Only the Government stakeholders are named within the policy document but the medical leadership of the review (Lord Darzi), the forward from Professor Sir John Tooke (a doctor), lead of Aspiring to Excellence (2008) and the appendix of the document suggest that the medical profession were key players in the development of the policy.

The success of actors to drive policy is dependent on their power to influence government. The medical profession is acknowledged by a number of authors as a group with significant power (Buse et al., 2005, Crinson 2009, Ham 2009). Thus, the medical profession were drivers of AHQW (DH 2008a) but at the micro level of implementation many members of the medical profession resisted AHPs and nursing ambitions to extend roles (Currie 2011). Other actors alluded to in the policy are opaque; staff representatives, professional bodies, trade unions, higher education representatives and acknowledged experts are referred to but not specified. Supplementary literature provides evidence that the nursing profession was consulted. An anonymous report in the Nursing Times (2008) states that the changes in AHQW (DH 2008b) were a response to nurse opinion voiced in direct consultation with the profession.

Opposing the drivers of any policy are those actors, which resist policy. There were few resistors to the AHQW (DH 2008a). NHS employers could be categorised as such, concerned with a policy they perceived to further diminish their members’ influence in workforce and education planning (NHS Employers website 2008).
Table 9: Stakeholders in AHQW (2008a)

<table>
<thead>
<tr>
<th>Level</th>
<th>Drivers</th>
<th>Neutral</th>
<th>Resistors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macro</td>
<td>Government: Secretary of State for Health Parliamentary Under Secretary of State – Professor the Lord Darzi Parliamentary Under Secretary of State for Health – Ann Keen MP MHS Chief Executive – David Nicholson Medical profession: British Medical Association (BMA) Deaneries Royal Colleges General Medical Council (GMC) Nursing and AHPs</td>
<td>Patients</td>
<td>NHS Employers Higher Educational Institutions Independent sector Industry Strategic Health Authority (SHA)</td>
</tr>
<tr>
<td>Micro</td>
<td>Nursing and AHP aspirations</td>
<td>Patients</td>
<td>Medical Professionals</td>
</tr>
<tr>
<td></td>
<td>Managers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- High Power
- Medium Power
- Low Power

Reviewing the context and actors' influences on AHQW (DH 2008a) has concurrently allowed analysis of the process aspect of the analysis framework from the problem identification and policy formation perspective. To continue the process analysis as defined by the stages heuristic requires review of AHQW (DH 2008a) implementation and evaluation.
Policy Implementation and Evaluation

Implementation of AHQW (DH 2008a) was dependent on the creation of a number of high-level organisations. It is appropriate therefore to evaluate one aspect of the AHQW (DH 2008a) in terms of the existence of these organisations (Table 10)

Table 10: Institutions created as a result of AHQW (2008a)

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Date Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Education England</td>
<td>February 2009</td>
</tr>
<tr>
<td>National Professional Advisory Board for AHPs</td>
<td>September 2009</td>
</tr>
<tr>
<td>National Professional Advisory Board for Nursing and Midwifery</td>
<td>September 2009</td>
</tr>
<tr>
<td>Centre for workforce intelligence</td>
<td>February 2009</td>
</tr>
<tr>
<td>Health and Innovation Clusters</td>
<td>17 established to August 2011</td>
</tr>
</tbody>
</table>

Another evaluation opportunity is provided through review of education funding. Here doubt, that the vision of AHQW (2008a) to ensure funding was transparent and equitable had been achieved, can be introduced. Table 11 provides detail of MPET funding from NHS London Documents.

Thus in 2010/11 NHS London proposed to inequitably spend 61% of the education budget on the medical profession, a staff group representing 11% of the NHS workforce.
<table>
<thead>
<tr>
<th>Funding Stream</th>
<th>Professions supported</th>
<th>Spend (£) 2007/08</th>
<th>Spend (£) 2009/10</th>
<th>Planned budget (£) 2010/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total MPET budget</td>
<td></td>
<td>997 million</td>
<td>1.1 billion</td>
<td>1.2 billion</td>
</tr>
<tr>
<td>NMET (1): Pre registration training</td>
<td>Nurses, midwives, AHP, Dental Care Professionals and HCS</td>
<td>278 million</td>
<td>287 million</td>
<td>326 million</td>
</tr>
<tr>
<td>NMET (2): Post registration training</td>
<td>Nurses, midwives, AHP, Dental Care Professionals and HCS</td>
<td>47 million</td>
<td>44 million</td>
<td>49 million</td>
</tr>
<tr>
<td>SIFT: Pre-registration training</td>
<td>Medical and Dental</td>
<td>297 million</td>
<td>316 million</td>
<td>321 million</td>
</tr>
<tr>
<td>MADEL: Post registration</td>
<td>Medical and Dental</td>
<td>370 million</td>
<td>402 million</td>
<td>415 million</td>
</tr>
</tbody>
</table>

Continuing the review of implementation, NHS workforce planning reveals a continuing single profession bias, with most effort and attention given to the medical workforce (Kings Fund 2009). Additionally, the clinician, leader and partner roles proposed in AHQW (DH 2008a) remain unclear and the blurring of professional boundaries has promoted wide variation in practice nationally (Melby et al., 2010).

Failure to implement significant sections of AHQW (DH 2008a) was confirmed by publication of Planning and Developing the NHS Framework (DH 2010). This document reiterated the aims of AHQW (DH 2008a); to clarify national workforce planning and education, improve transparency and equity in education funding and clarify roles, responsibilities and accountabilities. That re-clarification was required, confirmed the lack of implementation of AHQW (DH 2008a) and the slippage of the commencement of this work by 2 years.

**Discussion**

AHQW (DH 2008a) followed a succession of health policies advocating the reconfiguration of professional roles and a dissociation from professional
monopolies. This vision was juxtaposed in AHQW (DH 2008a) with the need to define the role of the doctor and the nurse. The proposed role of partner alongside leader and clinician for healthcare practitioners was to be supported through a regulated, competency based approach, with transparent equitable funding for education.

AfC (DH 1999) and the KSF (DH 2004) had provided previous opportunities for the vision of AHQW (DH 2008a). Both documents were intended to bring fairness and equality to roles, education and training within the NHS. The medical profession chose and were tolerated by the state to exclude themselves from both AfC (DH 1999) and the KSF (DH 2004). This example of veto actively perpetuated the disparity between healthcare practitioners’ development. By the time of AHQW (DH 2008a) however, at the macro level, legislative and social influences compelled the medical profession to change and they became key stakeholders in AHQW (DH 2008a) development. This contrast in medical profession engagement ably demonstrates the power of the medical profession to both influence and choose its terms of engagement with state driven policy.

At the macro level, Ham (2009) contends that the medical profession is accepted as the primary producer group within the NHS and as such is able to exert more leverage/power on health policy than other staff groups. This hegemony of the medical profession in the United Kingdom is acknowledged by a number of authors (Crinson 2009, Ham 2009, Holm 2011 and Turner 1996) and has been the subject of extensive sociological literature.

More recently though there has been discord regarding the power of the medical profession. Some authors suggest that the power of the medical profession is declining (Walt and Gilson 2008) conversely Holm (2011) argues that the multi-
professional team remains a hierarchical bureaucracy with the doctor at the apex of a decision-making pyramid. Accepted theory has linked this dominance to the professional status, acquired over centuries, that is accorded to the medical profession (Scambler 1991).

The past two decades have witnessed the attempt by nursing and AHPs to advance practice in an attempt to attain the same professional status. Currie et al. (2011) propose that the attraction of this title being in the exclusivity and privilege it infers. The development of degree requirements for AHPs registration and the publication of The Scope of Professional Practice (1992) for nurses have paved the way for practice development, innovation and academic achievement. Nonetheless, several authors argue that despite these efforts they have failed to emulate the medical model of professionalism (Crinson 2009, Currie 2011, Timmons 2011). Taylor and Field (2003) contend that the celebrated, new extended roles undertaken by nurses and AHPs merely represent a form of labour substitution, furthermore one that requires medical acquiescence (Currie 2011).

Malandipitously, the very opportunities provided by health policy such as AHQW (DH 2008a) for nurses and AHPs to become partners in healthcare, through the extended role opportunities offered by the blurring of professional boundaries, may actually impede the goal of professional status. If a profession is defined by it having both a unique body of knowledge (Rutty 1998) and the status of monopolistic supplier of a service (Crinson 2009, Timmons 2011), then as boundaries between professions are blurred the opportunities for non-medical occupations to achieve those characteristics diminish.

Furthermore, attempts to increase professional autonomy and influence are at odds with the state led development of competency frameworks for AHPs and other
regulatory measures (Cameron and Masterson in Davies 2005). A significant body of work has been undertaken since the publication of AHQW (DH 2008a) to develop a competency based structure for AHPs to underpin the extension of roles and enhance the effectiveness of workforce planning (DH 2008c, DH 2011). Yet as Bechtel et al. (1999) argue members of any profession require both clinical proficiency and emancipatory thinking, countering the argument that professions can be defined by a series of competencies;

Despite the macro-level direction, competency based frameworks have yet to be robustly evaluated in terms of effectiveness in either service delivery or workforce planning (Harden and Fraher 2010)

**Conclusion**

In undertaking this policy analysis, it must be acknowledged that as a healthcare professional the author is not ‘value neutral’ (Buse et al., 2005, p.190) and therefore the results of this policy analysis will be biased reflecting the influence of the author’s position on the interpretations and conclusions (Walt et al., 2008). Despite AHQW (DH 2008a), in 2011 there remain inequalities and inconsistencies in national workforce planning, education and the roles, responsibilities and accountabilities of the various healthcare occupations.

To be successful policy must address organisational, professional and social context together with macro and micro level arrangements (Currie 2011, Watt et al., 2002). AHQW (DH 2008a) focuses on the macro level direction; the micro level implementation is not dictated. It can therefore be argued that as a policy AHQW (DH 2008a) failed to consider adequately the professional and cultural factors that could sabotage reforms to professional roles, workforce planning and education. This lack
of micro level direction resulted in failure of implementation of a number of policy objectives.

The challenge for the state will be how to address these factors in future policy. The challenge for AHPs and nursing will be how to preserve the essence of the individual professions in continuing the professionalization agenda and supporting state policy direction.
References


Judgement of 13 November 1996: Case C-84/94 UK v Council of the EU. European Court Reports, pp. 1-5755


Advanced Research Methods Module Assignment

A – scenario 1: Living Well with Dementia

Introduction

This study aims to understand the service provision for dementia care within a locality in the south of England following the publication of the National Dementia strategy (DH 2009a). This work will seek to justify, through critical analysis, the study design, sampling procedure and ethical issues of the proposal submitted to address the research questions.

Research design

Appropriate provision of services for people with dementia as perceived by people with dementia, their carers and health care providers is a complex social phenomenon. Qualitative research permits inquiry into real life situations but also allows investigation into social movements and interactional relationships (Corbin & Strauss 1998), it is therefore an appropriate methodology for this study.

Grounded theory and phenomenology are methods of inquiry, from different epistemological origins, in which the researcher seeks to understand real life situations (Baker et al., 1992). The sociological origins of grounded theory, specifically symbolic interactionism, which suggests that people behave based on meanings they derive from interaction with others and society in social processes (Starks and Brown-Trinidad 2007) make the method particularly suited to understanding what the patients, carers and health care professions think of dementia care in the locality. Secondly, the lack of literature on this subject prompts the selection of the grounded theory method as a flexible research approach which
will permit the researcher to inductively generate a theoretical explanation of the phenomenon (Baker et al., 1992).

To identify evidence on the differing models of dementia service provision a literature review will be undertaken prior to the study; this is contentious in grounded theory literature. Glaser and Strauss (1967) however, state that a researcher’s life experiences, reading and previous research can inform emergent core categories, although the researcher should not enter the field with an a priori hypothesis. The literature review will not be exhausted prior to the study start and will be consulted as part of the iterative and inductive process of theory development during the study (Goulding 2005).

Data Collection Methods

There is no correct way to measure patient experiences; different approaches can be used for different purposes. In depth interviews and focus groups are both useful for discovering the relationship between healthcare events and their circumstances (Foot and Fitzsimmons 2011).

Focus groups will be undertaken with the carers of people with dementia and healthcare professionals. Focus groups can elicit data in quantity quickly and participant interaction can generate novel information (Marshall and Rossman 2011), however, a criticism is the potential for participants to conform with the perceived view of the group (Hollis et al., 2002). Face to face in-depth interviews will therefore be undertaken with the participants with dementia in order to gain a detailed in-depth account of the personal context within which the phenomenon is located (Ritchie and Lewis 2003). A concern may be the ability of persons with dementia to cognitively process and adequately articulate responses to questioning. Previous qualitative
studies, however, have demonstrated that people with dementia are able to express feelings and concerns with clarity even in the latter stages of the disease (Claire et al., 2008).

Access to vulnerable groups of people, such as those with dementia may present problems for the researcher; formal or informal gatekeepers may deny or restrict access in order to protect their families or patients (Bryman 2004). Personal introduction will be sought by health care professionals as this has been suggested as one way of accessing a community and the researcher will be sensitive at all times to any reluctance of subjects to participate (Marshall and Rossman 2011).

The interview schedules will be semi-structured to ensure key areas are addressed (Holloway and Wheeler 2010) and the questions developed from the literature and expert consultation in the first instance (Iliffe et al., 2006, Lawrence et al., 2011). Ongoing analysis of the interview data will inform the questions that are asked in subsequent interviews; grounded theory method requiring that the interviews are driven by the emerging theory (Wimpenny and Gass 2000). Focus groups and interviews will be taped and transcribed verbatim prior to analysis. There are acknowledged disadvantages to recording interviews; the equipment may be distracting to the participants and transcription is lengthy (Blaxter et al., 2010). However, this approach is documented in the literature as appropriate for this cohort of patients (Lawrence et al., 2011).

**Sampling**

Theoretical sampling will be used; this iterative process allows data analysis to inform subsequent data collection and sampling (Ritchie and Lewis 2003). Recruitment and interviewing will continue until theoretical saturation is reached.
(Lawrence et al., 2009), one risk of this approach is that the researcher identifies the point of theoretical saturation too early (Bryman 2004). It is impossible to predict sample size in grounded theory studies but it is probable for ethical approval and fiscal purposes that some indication will be required. Grounded theory studies in the literature report sample sizes from 10 to 60 participants (Starks and Brown-Trinidad 2007).

Key stakeholders will be identified from mental health professionals in the locality but there may be stakeholders who have not accessed dementia care services so voluntary organisations will also be approached (Lawrence et al., 2009). Prospective participants will be invited to participate by letter, accompanying information sheet and reply sheet. Those agreeing to participate will be contacted by telephone and focus groups and interviews arranged at the participants convenience. Written consent will be obtained and where participants are deemed to lack the capacity, provision for consent as detailed in the Mental Capacity Act (2005) will be made.

Inclusion and exclusion criteria will be informed by the literature in this area (Wolfs et al., 2011):

**Inclusion criteria**

- Person or carer for a person with a diagnosis of dementia who is able to undertake informed consent
- Healthcare professional engaged in the provision of services to people with dementia

**Exclusion criteria**

- Person or carer for a person with dementia who are unable to speak English in order to undertake informed consent
**Ethical considerations**

Researchers have a responsibility for knowledge production that requires them to: recognise and balance subjectivities, give accurate research accounts, act within the law and develop the required expertise (O’Leary 2004). Undertaking research with participants suffering from cognitive impairment requires the consideration of specific ethical concerns, which must be addressed (Gibson *et al.*, 2004). Appropriate research and development support and ethical approval will be obtained and the principles of Good Clinical Practice (GCP) will be adhered to in order to address these issues.

In undertaking qualitative research the researcher enters the lives of the participants (Marshall and Rossman 2011), which can lead to unpredicted change in both the participants and the researcher (Caelli 2001). A committee including one lay member will be formed to oversee the project and debate any ethical or process considerations that may arise during the study.
References


Introduction

The following will aim to critically analyse and justify the research design, data collection methods, sampling and ethical issues related to a study comparing usual hospital follow-up (HFU) care with telephone follow up (TFU) in breast cancer patients after treatment.

During the past 20 years the Clinical Nurse Specialist (CNS) role in breast care has become established (Cruikshank 2008) and CNS follow-up for women with breast cancer proven safe (Koinberg et al., 2004). TFU in cancer has demonstrated favourable patient satisfaction (Cox et al., 2008), no difference in time to detection of recurrent disease (Beaver et al., 2009) with no psychological disadvantage (Kimman et al., 2010).

Literature search

A systematic literature search will be undertaken to understand the current knowledge in this area and thus contextualise the current study (Neuman 2006). To limit the extensive available literature on this subject, non-English language and papers published more than 20 years ago will be excluded as older publications predate the development of the CNS role. (Cruikshank 2008).

Research design

Research questions will be addressed utilising a quantitative method of inquiry specifically a non-inferiority randomised trial (NIRT). In determining causal
relationships between treatment and outcome, randomised controlled trials (RCTs) are considered the method with the most rigor (Sibbald and Roland 1998), which allows the researcher to demonstrate whether one intervention is superior to another (Piaggio et al., 2006). HFU for breast cancer patients is a proven intervention; TFU is unlikely to have superior efficacy but offers advantages to patients (reduced hospital visits) and the organization (costs). The proposed design will seek to determine whether TFU is inferior or not, in terms of a pre-defined non-inferiority margin in study outcome measures (determined from the literature), to HFU.

NIRTs like RCTs are more costly and time consuming than other study designs and there are ethical considerations which include exposing patients to interventions that are believed to be inferior (Armitage 2011). In the proposed study these risks are low; the investment in resources may be off-set by a potential reduction in provider costs and TFU has demonstrated efficacy in the literature (Beaver et al., 2009, Kimman et al., 2010). Randomization will control threats to internal validity by distributing known and unknown biases between the trial groups (Grimshaw et al., 2000).

The derivation of the hypothesis and null hypothesis in NIRT designs are reversed (Piaggio 2006); tentative hypothesis and null hypothesis for the primary outcome measure, time to detect recurrence of disease are:

$H_0$ – HFU detects recurrence in a shorter time than TFU

$H_1$ – HFU and TFU detect recurrence in an equivalent time.

Secondary patient outcome measures are proposed: anxiety, satisfaction, information needs, and frequency and magnitude of requested clinical investigations.

Patients attending clinics will be invited to participate by letter. An accompanying information sheet will include written indication of willingness to participate after
which written consent will be sought. Randomisation will be through an external computerised telephone service. Those in the usual care group will receive outpatient HFU as per current hospital protocol, patients randomised to the TFU group will receive 20-minute telephone calls from a CNS (Cox et al., 2008). The CNSs will undergo training in TFU to attempt to minimise variability in the telephone calls.

**Data collection**

Data collection will take place over a 3-year period; this is identified as the time period in which recurrence of breast cancer is most likely (ASCO 2009). A method for time to detection of recurrent disease, the primary outcome measure in this study, has been described by Beaver et al., (2009) and will be replicated in this study.

Self-rated questionnaires (SRQs) will be used to capture secondary outcomes data in both groups. SRQs are a cost effective method of gaining data from a large number of participants and result in quantitative data that is amenable to statistical analysis (Bryman 2004). Strategies such as length, style and structure of the questionnaires will be considered to improve the response rate, acknowledged as a significant disadvantage of this method (Bryman 2004).

The Hospital Anxiety and Depression scale (Zigmond and Snaith 1983) has been deemed an appropriate measure for detection of emotional disorders in women with breast cancer (Koinberg et al., 2004) and will be used in this study. Previous studies have investigated patient information needs (Degner et al., 1997, Luker et al., 1996) and patient satisfaction (Beaver et al., 2009). These studies will be used to inform questions regarding information needs and satisfaction of the participants of this study.
SRQs, not previously validated in this patient population, will be piloted and amended prior to study start to ensure they function effectively (Bryman 2004). SRQs will be distributed to patients after randomisation, in the middle and at the end of the trial and will be posted to participants immediately after the corresponding follow up appointment with the aim of improving response rates (Beaver et al., 2009).

Requested clinical investigation results will be extracted retrospectively from the electronic patient record to allow comparison between the groups.

**Sampling**

NIRTs typically require a larger sample size than RCTs (Jones et al., 1996), the margin of non-inferiority, level of confidence and the risk of type II error will also influence the sample size (Piaggio 2006). A statistician will be consulted to advise on the required sample size to minimise Type I (the erroneous acceptance of an inferior treatment) and Type II error (erroneous rejection of a truly non-inferior treatment). The significance level for the results will be set at 0.05 (5%) and the power at 80% or above; by convention a 20% chance that a study's results will be falsely negative due to sampling error is accepted (Lee 2001). Previous literature has described a rationale for inclusion and exclusion criteria (Beaver et al., 2009, Cox et al., 2006):

**Inclusion criteria**

- Completion of primary treatment for breast cancer – with no evidence of recurrence
- Low to moderate risk of recurrence
- Patient with no auditory impairment (including any hearing aid requirements)
- Patient has a telephone
- Patient can understand English and is able to consent
Exclusion criteria

- Tumour size > 50mm
- Patients with inflammatory carcinomas and sarcocarcinomas
- Patients with auditory impairments not corrected by a hearing aid
- Patient has no access to a telephone
- Patients unable to speak English and unable to consent

Ethical considerations

Researchers will be GCP trained, and the study protocol will be submitted for ethical approval at the study site prior to study start. Replicating Cox et al., (2006) a trial management group will monitor progress and debate key issues as they arise.
References


National Institute for Clinical excellence (NICE 2004). Improving Supportive and Palliative Care for Adults with Cancer. NICE: London


B – scenario 4: Evaluation of a CBT training programme for palliative care staff

Introduction

The aim of this research study is to evaluate a Cognitive Behavioural Training (CBT) programme for palliative care staff in a hospice in south England.

Research design

A literature review will be undertaken (slide 2). A mixed methods study design will be used (slide 3). A randomised controlled trial was not considered for this project despite being perceived as the gold standard (Sibbald and Roland 1998) due to the impossibility of randomisation prior to delivery of the intervention. However, in selecting a pre-experimental design, lack of internal validity will mean difficulty in inferring causal relationships (Neuman 2006).

There is debate regarding mixed method research design, some authors have emphasised the incompatibility of the epistemological positions of these paradigms (Morgan 1998). A pragmatic position will be adopted with the aim of eliciting a more complete understanding of the impact of the programme (Fielding and Schreier 2001). A longitudinal design will add time and cost to the study but in the absence of pre-test data will provide additional post-test data sets which may allow causal inferences to be made (Bryman 2004).

Both interviews and focus groups are useful for discovering the relationship between healthcare events and their circumstances (Foot and Fitzsimmons 2011). In this
study focus groups will be undertaken enabling the interaction within the group to provide a source of further insight (Blaxter et al 2010).

**Data collection methods**

Data will be collected at 2 time points (slide 5) established as appropriate timeframes in the literature (Galfin et al., 2011). Comparisons will be made between the data sets to determine any statistical differences between the measures.

Currently there is neither general definition of therapist competence nor specified method of measuring it (Rakovshik and McManus 2010) thus current literature will be used to inform data collection methods (slide 5). The primary data source will be the audiotaped patient sessions; this is deemed valid as this method is established practice in the literature (Mannix et al., 2006). Tapes will be anonymised and the rater blinded to trainee and month of recording; intra-rater reliability will be established. The data collection methods will serve to address discrepancies between therapist self-reported competence and commensurate change in clinical skill (Rakovshik and McManus 2010).

**Sampling**

A second hospice of equivalent staffing establishment and user population will be selected to act as an independent control and staff meeting the inclusion criteria will be invited to participate in the study. A purposive sample of key stakeholders to participate in the focus groups will be identified through communication with the hospice centre manager. Many researchers recommend homogeneity within the groups however a diverse group can maximise exploration of different perspectives (Pope and Mays 2006). The focus group will take place at the end of the 12 weeks
and with between 6 and 10 participants (Marshall and Rossman 2011). Inclusion and exclusion criteria for the study are detailed on slide 4.

**Ethical considerations**

These are detailed on slide 6.

**Conclusion**

Pre-experimental study design precludes attribution of the results observed exclusively to the intervention (Bork 1993). It is hoped the data from the proposed study would inform a more robust study to determine the scope for CBT training palliative care staff to be developed in the long term.
The Evaluation of a Cognitive Behavioural Training Programme for Hospice Staff

Jacky Jones

Literature review

A literature review is an essential step in the research process in order to establish credibility and demonstrate current project links to previous research (Neuman 2006)

<table>
<thead>
<tr>
<th>Search Engines</th>
<th>CINAHL, EMBASE, Medline, Psychinfo, Psyclit, PsycNET, Pubmed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key words (identified with experts)</td>
<td>Cognitive behaviour/behavioural therapy (CBT), cancer, oncology, palliative care, advanced cancer, anxiety, depression, training, teaching, supervision, outcome(s), competency, dissemination, effectiveness.</td>
</tr>
<tr>
<td>Limits</td>
<td>Language (English), Age (adult), Time (? – 2011)</td>
</tr>
<tr>
<td>Other search strategies</td>
<td>Ancestry search using reference lists of retrieved articles</td>
</tr>
<tr>
<td></td>
<td>Author search for most pertinent articles</td>
</tr>
<tr>
<td></td>
<td>Journals with the highest number of relevant articles</td>
</tr>
</tbody>
</table>
Design: Longitudinal controlled trial

Mixed methods
Intervention group: Hospice 1 - CBT training programme
Control: Hospice 2 - No training programme

Outcome measures

Primary outcome measure:
• The competency and knowledge of palliative care staff in application of CBT techniques

Secondary outcome measures:
• The extent to which the skills of the trainees are put into practice post training
• The views of key stakeholders with respect to the training intervention

Sample

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
<th>Palliative Care Staff</th>
<th>Key Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Willing to participate</td>
<td>Willing to participate</td>
</tr>
<tr>
<td></td>
<td>Permanent members of the hospice staff</td>
<td>Ability to undertake informed consent</td>
</tr>
<tr>
<td></td>
<td>Staff who have not had previous training in cognitive therapy</td>
<td>Deemed medically well enough</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exclusion criteria</th>
<th>Palliative Care Staff</th>
<th>Key Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Temporary staff</td>
<td>Inability to undertake informed consent</td>
</tr>
<tr>
<td></td>
<td>New staff post study start</td>
<td>Deemed medically too unwell</td>
</tr>
<tr>
<td></td>
<td>Staff who have had previous training in cognitive therapy</td>
<td>Age 18 or under</td>
</tr>
</tbody>
</table>
Data collection

• 2 time points: 4 weeks and 12 weeks post training

• Audio tapes of trainee sessions with palliative care patients; independently rated using the validated Cognitive Therapy Scale (CTS) (Young and Beck 1980)

• Participant questionnaire – developed from the literature (Moorey et al 2009)

• Focus group - semi structured interviews with key stakeholders – developed from literature and expert opinion (Anderson et al 2008)

Ethical issues

• Good Clinical Practice

• Ethical committee approval and appropriate Research and Development department sponsorship

• Signed informed consent
  • Palliative care staff
  • Key stakeholders

• Anonymised results

• Gatekeeping (White et al 2008)

• Governance processes established
  • e.g. rater identification of unsafe practice
References

- Young, Jeffrey, and Aaron T. Beck. "Cognitive Therapy Scale Rating Manual."
References


Service evaluation and Leadership Module Assignment

Pilot 7-day working model of physiotherapy service provision (7DW) to the stroke unit at an acute London teaching trust (ALTT).

Introduction

Each year in England and Wales over 150,000 people suffer a stroke, of these a third will result in death with the remaining requiring rehabilitation (Carroll et al., 2001). Stroke patients are estimated to occupy 20% of all acute beds (DH 2005) and represent a substantial cost to society with significant on-going healthcare requirements (Carroll et al., 2001).

Following stroke, physical activity-based therapy has utility in promoting functional ability recovery (Kwakkel et al., 2004). Furthermore a positive dose-response relationship has been established between intensity of physiotherapy hours/day (Sevenius et al., 1985) and days/week (Rapoport et al., 1989) and functional outcomes and length of hospital stay respectively. This evidence and recent national drivers for physicians to work 7-days a week (Aylin et al., 2010) have highlighted an inequitable provision of physiotherapy services to the stroke population admitted to the ALTT. There is then momentum in the organisation to provide physiotherapy 7-day-working services.

Service Evaluation

The proposal is to undertake a service evaluation of 7DW in stroke and provide robust evidence for decision makers within the organisation. Substantive implementation of novel services should only occur after favourable evaluation since enthusiastic professionals’ assumptions of impact are often misplaced (McDonnell et
Robust evaluations ensure improvement as a consequence of any given change and allow economically viable maximisation of health gains (Knibb 2009).

**Aim**

To compare a 5-day working model of physiotherapy service provision (5DW) with 7DW to the stroke unit at an ALTT.

**Objectives**

1. To understand the extent of knowledge of the impact of 7-day-working models of physiotherapy service provision to stroke patients
2. To describe differences in the following parameters between stroke patients receiving physiotherapy 5DW or 7DW models
   a. Length of hospital stay (LOS)
   b. Discharge destination
3. To describe differences between 5DW and 7DW models in the following:
   a. Number and length of physiotherapy patient interventions
   b. Functional outcomes of patients at stroke unit discharge
   c. Staff sickness absence
   d. Temporary staffing use
4. To describe the experiences of stakeholders during 7DW.

**Underpinning framework**

The evaluation (Figure 3) will be undertaken utilising the Donabedian model for healthcare quality assessment (Donabedian 2005) embedded within the MRC framework for developing and evaluating complex interventions (MRC 2008). The pilot will follow three stages of the MRC framework model: development, feasibility, evaluation and will generate robust information to inform trust decision makers.
The ‘structure, process, outcome’ (SPO) model (Donabedian 2005) will be used in the development phase of the MRC framework. While it’s limitations, for example it does not consider environmental factors (Qu et al., 2010) and some critics consider it too static (Dimick 2010), are acknowledged; it’s accomplished method for modelling processes and informing outcomes for the evaluation made its inclusion warranted.

Factors that may be considered within the SPO model for this study are summarised in Table 12.
Table 12: Factors considered within an SPO model

<table>
<thead>
<tr>
<th>Structure</th>
<th>Process</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff numbers and grade of physiotherapists</td>
<td>Frequency and duration of physiotherapy visits</td>
<td>Length of stroke unit stay</td>
</tr>
<tr>
<td>Physiotherapy 7-day roster</td>
<td>Content of physiotherapy intervention</td>
<td>Discharge destination</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measures of physical function</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Staff sickness absence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Temporary staffing usage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Patient/staff experience</td>
</tr>
</tbody>
</table>

(Adapted from Hoenig et al., 2010)

Literature review

A systematic literature search will define current knowledge in this area, inform the method and outcome measures and provide a theoretical understanding of the likely process of change (Craig et al., 2008, Neuman 2006). Modern physiotherapy services, including those peculiar to stroke, have existed since the 1970’s and a critical mass of literature is available such that non-English language and papers prior to 1970 will be excluded.

Methodology

A quantitative, retrospective and prospective observational cohort study design is proposed for this service evaluation (Appendix 1). The retrospective group will be manually matched (Boxall et al., 2004) to the prospective group by age, gender and stroke classification (Bamford et al., 1991).

Randomised controlled trials (RCTs) are perceived as the gold standard for determining a causal relationship between intervention and outcome (Sibbald and Roland 1998). However, they are only appropriate only when there is genuine uncertainty about the effectiveness of an intervention (Eccles et al., 2003). An
observational study is an appropriate method of inquiry; it is feasible in a clinical setting and can accommodate a heterogeneous population (Tinetti et al., 2011). However, threats to internal and external validity are acknowledged (Bork 1993).

Although a qualitative approach has the ability to elucidate rich in-depth information relating to patient and staff experience (Holloway and Wheeler 2002), its limitations include the relatively small number of participants that can be studied in most naturalistic settings. A quantitative method of capturing stakeholder experience will be utilised instead in this study to capture more of the population and to avoid logistical difficulties of undertaking qualitative methodologies with discharged patients.

Methods
Outcome measures selected are informed by the literature (Duncan et al., 2000). The primary evaluation outcome will be LOS and proposed secondary outcomes are; change in gait velocity, change in ability to perform activities of daily living (ADLs), number and length of physiotherapy interventions per patient, staff sickness absence rates, proportion of temporary physiotherapists, discharge destination and stakeholder experience.

The 5-metre walk test is recommended as the most responsive method of measuring gait velocity (Salbach et al., 2001) and validity and reliability metrics in stroke patients are favourable (Holden et al., 1984). It is acknowledged however that gait velocity becomes erroneous in subjects who walk very slowly and require assistance (Richards et al 2006). The Barthel Index, a composite measure of ADL, will capture functional status in this sub-population or non-ambulatory subjects. It has demonstrated validity and reliability in the stroke population and is recommended.
over gait velocity for patients who have suffered a severe stroke (Salbach et al., 2001).

Self-rated questionnaires (SRQs) will be used to capture experience data from patients/carers and staff. SRQs are a cost effective method of gaining data from large numbers of participants and results in quantitative data amenable to statistical analysis (Bryman 2004). SRQs, not previously validated in this patient population, will be piloted and amended prior to study start to ensure they function effectively and strategies such as length, style and structure of the questionnaires will be considered to improve the response rate, acknowledged as a significant disadvantage of this method (Bryman 2004).

In order to match patients and inform the evaluation, patient population characteristics will be collected and include age, gender, stroke classification (Bamford et al., 1991) and co-morbidities via the Charlson co-morbidity index, which has been validated in the stroke population (Tessier et al., 2008). Daily staff numbers and grade characteristics will inform the economic evaluation.

Data Collection

The data collection methods are detailed in Table 13.

Sampling

The time period for data collection will be informed by management timescales, literature (Rapoport et al., 1989), statistician advice and discharge rate from the stroke unit during 7DW (approximately 10 patients per week). A commensurate number of patients who experienced 5DW will be included retrospectively form the point of 7DW start. All significance levels for analysis will be set at ≤0.05 (5%).
Inclusion/exclusion criteria for the evaluation, informed by the literature (Sivenius et al., 1985, Lincoln et al., 1999), are detailed in table 14.

Table 13: Data collection methods

<table>
<thead>
<tr>
<th>Data descriptor</th>
<th>Criterion</th>
<th>Data source or method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population demographics</td>
<td>Age</td>
<td>Electronic patient record</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>Electronic patient record</td>
</tr>
<tr>
<td></td>
<td>Co-morbidities</td>
<td>Electronic patient record</td>
</tr>
<tr>
<td></td>
<td>Stroke type</td>
<td>Electronic patient record</td>
</tr>
<tr>
<td>Patient measures</td>
<td>Gait speed</td>
<td>Paper medical record</td>
</tr>
<tr>
<td></td>
<td>BI</td>
<td>Paper medical record</td>
</tr>
<tr>
<td></td>
<td>Experience</td>
<td>Postal or hand delivered questionnaire</td>
</tr>
<tr>
<td>Physiotherapy measures</td>
<td>Skill mix</td>
<td>Electronic staff record</td>
</tr>
<tr>
<td></td>
<td>Number interventions</td>
<td>Electronic patient record</td>
</tr>
<tr>
<td></td>
<td>by day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Length of intervention</td>
<td>Electronic staff record</td>
</tr>
<tr>
<td></td>
<td>Temporary staffing usage</td>
<td>Electronic staff record</td>
</tr>
<tr>
<td></td>
<td>Sickness rates</td>
<td>Electronic staff record</td>
</tr>
<tr>
<td></td>
<td>Experience</td>
<td>Hand delivered questionnaire</td>
</tr>
<tr>
<td>Hospital metrics</td>
<td>Length of hospital stay</td>
<td>Electronic patient record</td>
</tr>
<tr>
<td></td>
<td>Discharge destination</td>
<td>Electronic patient record</td>
</tr>
</tbody>
</table>

Table 14: Inclusion an exclusion criteria

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
<th>Exclusion criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>All patients admitted to the stroke unit with a diagnosis of stroke as defined by the WHO</td>
<td>Patients admitted to the stroke ward with a diagnosis other than stroke</td>
</tr>
<tr>
<td>Patients or their advocate who consent to take part in the evaluation</td>
<td>Patients admitted to the stroke ward with a diagnosis of stroke for less than 48 hours</td>
</tr>
<tr>
<td>Staff on a permanent contract who experience both models of working and consent to take part in the evaluation</td>
<td>Patients on an end of life pathway</td>
</tr>
<tr>
<td></td>
<td>Patients, advocates or staff who do not consent to take part in the evaluation or refuse physiotherapy intervention</td>
</tr>
<tr>
<td></td>
<td>Agency staff</td>
</tr>
</tbody>
</table>
Ethical considerations

Ethical issues can occur at all phases of an evaluation study (Green and South 2006) since in the acute setting it is acknowledged that the professionals are powerful and the patients vulnerable (Banks and Gallagher 2009). As this evaluation study includes service user experience, appropriate ethical approval will be obtained and the evaluation will comply with standards of Good Clinical Practice (De Vaus 2002). Prior to SRQ distribution, eligible staff and patients/carers will be offered an information sheet, which will include written indication of willingness to participate after which written consent will be sought.

Risk assessment

Potential risks associated with this service evaluation are detailed in table 15

Table 15: Risk assessment

<table>
<thead>
<tr>
<th>Risk</th>
<th>Implication</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-study changes to the stroke patient hospital pathway</td>
<td>Impact on outcome measures</td>
<td>Involvement of key stakeholders in project planning</td>
</tr>
<tr>
<td>Inability to recruit staff for 7DW</td>
<td>Physiotherapy intervention not delivered over 7-day week</td>
<td>Robust recruitment strategy</td>
</tr>
<tr>
<td>Lack of effect of intervention on outcome measures</td>
<td>Inadequate information for robust evaluation</td>
<td>Robust modelling of process and outcomes Literature review – to ensure sensitivity of outcome measures</td>
</tr>
<tr>
<td>Bias of internal evaluators</td>
<td>Inaccurate data</td>
<td>Consider use of external evaluator</td>
</tr>
</tbody>
</table>

Economic evaluation

Economic evaluation lies within the evaluation stage of the MRC framework (Knibb 2009). It is an important component of this service evaluation to provide a complete data set for decision makers and a cost-consequence analysis is deemed an appropriate method. Although arguably not the most efficient choice it has value for
the current study because it allows decision makers to impute their own values. Local context is therefore incorporated into the review of the costs (Coast 2004); important as stroke units are not uniform. Thus, this approach provides decision makers with relevant cost information regarding all the elements for each option to allow comparison.

The Leadership challenge

The preceding section described a service evaluation method for anticipated change within the physiotherapy department and the organisation. The following section will describe the change from a leadership challenge perspective. An established framework is used to provide a lens with which to scrutinise the influencing factors of context on leadership choices.

Change has been described as an imprecise science (DOH 1998) and yet contrariwise is often described in dichotomous terms; planned versus emergent, episodic versus continuous (NCCSDO 2001). A prediction is that the proposed service change will contain emergent elements; as such the planned process will include a level of unpredictability and thus complexity. There are numerous tools, models and approaches to manage complex change (NCCSDO 2001) but there is no evidence to support the use of one over another (Groll 1997). Notwithstanding this, it is generally agreed that change requires leadership in some guise (Jackson and Parry 2011).

The Oxford English Dictionary (1999) defines leadership as “the action of leading a group of people or an organization, or the ability to do this” (page 806). Despite this definition, there is no absolute agreement of what leadership is (Jackson and Parry 2011) arguably because the term means different things to different people (de Jong
and Den Hartog (2007). Henceforward Yuki’s definition of leadership will be considered:

“Leadership is the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives.” (Yuki 2010 page 26)

This definition implies that in the first instance it is necessary to hone aspects of the leadership task, thus informing the leadership approach. The Warwick Six C Leadership Framework (Hartley and Bennington 2010) allows scrutiny of my leadership challenge through consideration of its 6 elements: concepts, characteristics, contexts, challenges, capabilities and consequence to inform my leadership options. Although developed as a tool to scrutinise literature on leadership, the framework is also apposite to leadership considerations from a personal perspective. This paper will concentrate on the influence of the micro level context on my leadership role to implement 7-day working (7DW).

Context influences the leader’s interpretation of any given situation and a contextual understanding is widely agreed as a pre-requisite of effective leadership (Buchanan 2003). Context can be described from the perspective of national, regional/local and organisational agendas (Hartley and Bennington 2010) but a leader must also consider personal context in any leadership situation that is their own assumptions and frames of reference (Souba 2011).

My employer is an urban teaching secondary and tertiary care provider in South East London that has existed for 1000 years. The local culture is bureaucratic, hierarchical and medically dominated. The organisational hierarchy (appendix 2) provides information regarding one aspect of the organisational context of my role as Head of
Physiotherapy. However, 7DW will be delivered on the stroke ward, the responsibility of the Medical Directorate, to patients who are the responsibility of the medical practitioners.

My position in the organisational hierarchy confers authority to lead the physiotherapists within the organisation; positional authority which confers legitimate or positional power (Yukl 2010) to directly influence the physiotherapy staff. For example requiring attendance at meetings to discus and agree actions related to the implementation of 7DW. Staff must however admit the validity of my authority in order for me to successfully influence them (Hartley and Bennington 2010) and this is in part determined by whether they consider me a credible occupant of my position (Yukl 2010).

Both the trust-specific organisational hierarchies and the professional hierarchies inherent in any NHS organisation will affect the influence that I can exert in arenas external to the physiotherapy department. The physiotherapy head role has no positional authority within either the medical directorate structure or other professional hierarchies. Leaders in the acute London teaching trusts inhabit an environment in which the unequal distribution of power is omnipresent. The hegemony of the medical profession in the United Kingdom is acknowledged by a number of authors (Crinson 2009, Ham 2009) and has been the subject of extensive sociological literature. As the primary producer group in the NHS they are recognised as more powerful actors than physiotherapists in terms of influence within an organisation.

Despite the assertion of some authors that the power of the medical profession is declining (Walt et al., 2008), my experience to date leads me to concur with Holm (2011) that the multi-professional teams, the working units of any hospital, remain
hierarchical bureaucracies with the doctor at the apex of a decision-making pyramid. Leadership of change which impacts on patients thus requires influence of medical colleagues to support it; the medical profession however are not always supportive of other professionals who wish to take on leadership roles (Ham 2003). The 7DW model has significant physiotherapy human resource costs associated with it, to staff the rota. In the prevailing health economy, medical colleagues may not assess physiotherapy 7DW favourably compared with competing priorities for funding and may sabotage the required allocation of resources from the frontline directorate.

The physiotherapy lead position therefore does not provide compelling influence when negotiating with medical staff. Yukl (2010) suggests that in these situations personal power (perceived expertise for example) may prove more influential. However, my clinical work is in the Surgical, not Medical, Directorate thus my personal power might be modest. My leadership approach instead then may consider the expertise, and therefore personal power, of the physiotherapy staff who do work clinically in the stroke unit and by proxy influence their interrelationships with the frontline staff. Their influence on medical colleagues might be more effective in this way than mine.

Leadership approach

With my challenge described and defined, consideration is given regarding best-fit in terms of a leadership approach.

The historical, hierarchical structure of the NHS denotes that by convention the physiotherapy staff and I have preconceptions, perceptions and expectations of my role as leader (Gronn 2009). These expectations include articulating the change, setting the change in the context of the organisational goals (Parolini 2008) and provision of motivation and stimulation (Bass and Riggio 2006). Such considerations describe the basis of transformational leadership (TL) which has enjoyed a high
profile within NHS organisations in recent times. However, utilization of the possibly narrow individualistic TL approach (Yukl 2010) is unlikely to positively influence situations within the professional and organisational hierarchies which, as described, are crucial to successful implementation of this change. It may also fail to take advantage of the extensive capabilities and personal power present amongst the physiotherapists.

In contrast to the dualistic leader/follower paradigm, distributed leadership (DL) is leadership that is fluid and emergent and not the domain of one individual (Spillane 2005). Phenomena such as knowledge, work, learning and decision making are distributed amongst individuals and this can provide leadership more adjacent to the realities of workplace practice (Gronn 2002). So, in utilising DL there is an opportunity to make use of the breadth of skills, knowledge and influential abilities existing in the physiotherapy team in order to persuade professionals and managers within the medical directorate. However, a confusion of distributed leadership is my role as an individual in this model (Gronn 2011). Moreover, DL is more time-consuming than more directive approaches (Hartley and Bennington 2010). Thus the requirement on me to deliver to the organisation on the agreed goals of timely implementation of 7-day working may be at odds with the temporal requirement of DL.

A dichotomous alternative between the individualistic TL or the pluralistic DL does not resonate with the complexity of my situation. Gronn (2011) suggests this may be as a result of inappropriately assuming the generalisability of these approaches to my situation. To address the infinite number of individual leadership contexts in pluralistic organisations, a more congruent leadership style may therefore be a hybrid one (Gronn 2009). This type of leadership style provides a configuration that encompasses both the individualistic and distributed approaches. Such a style would
provide an adaptive response to the contextual challenges of my leadership position and allow me to combine the attributes of each leadership approach in proportions determined by me as the leader of the process (Gronn 2011).

This could be achieved by establishing a steering group which would provide me as the head of service with dual assets; an opportunity to undertake a transformational lead position in the group, whilst in parallel provide a forum to distribute leadership to physiotherapy team members. The distributed leadership roles might include ensuring 7DW as an agenda item on stroke team meetings and engaging medical staff, known to be supportive of physiotherapy innovation, to influence their colleagues. There are risks associated with this approach and the effectiveness of the leadership distribution may nevertheless be sabotaged by the powerful medical professional hierarchy (Currie and Lockhart 2011).

Conclusion
Healthcare is a pluralistic domain involving multiple actors and often conflicting objectives (Denis et al., 2001); such complexity suggests that the notion of a fixed leadership style being effective is irrational. Leadership today is ‘an improvisational and experimental art’ (Heifetz (2009) page 65). The hybrid approach proposed by Gronn (2009, 2011) appears to offer me and my current situation a flexible leadership approach, which allows for true staff involvement rather than just the rhetoric of empowerment (Jackson & Parry 2011) and implementation of 7DW in a timely and effective way.
References


