**Evaluation of a case management service to reduce sickness absence**

## ABSTRACT

**Background**

It is unclear whether and to what extent intensive case management is more effective than standard occupational health services in reducing sickness absence in the healthcare sector.

**Aims**

To evaluate a new return to work service at an English hospital trust.

**Methods**

The new service entailed intensive case management for staff who had been absent sick for longer than four weeks, aiming to restore function through a goal-directed and enabling approach based on a bio-psycho-social model. Assessment of the intervention was by controlled before and after comparison with a neighbouring hospital trust at which there were no major changes in the management of sickness absence. Data on outcome measures were abstracted from electronic databases held by the two trusts.

**Results**

At the intervention trust, the proportion of 4-week absences which continued beyond 8 weeks fell from 51.7% in 2008 to 49.1% in 2009 and 45.9% in 2010. The reduction from 2008 to 2010 contrasted with an increase at the control trust from 51.2% to 56.1% – a difference in change of 10.7% (95%CI 1.5% to 20.0%). There was also a differential improvement in mean days of absence beyond four weeks, but this was not statistically significant (1.6 days per absence, 95%CI -7.2 to 10.3 days).

**Conclusion**

Our findings suggest that the intervention was effective, and calculations based on an annual running cost of £57,000 suggest that it was also cost-effective. A similar intervention should now be evaluated at a larger number of hospital trusts.

**Key words**

## Sickness absence, case management, intervention, evaluation, cost-effectiveness, healthcare

INTRODUCTION

The high costs of long-term sickness absence for employers are well recognised [1,2]. However, health-related incapacity for work also has important adverse impacts on workers and their families. There is a strong positive association between unemployment and various markers of general, physical and mental ill health [3]. Moreover, the children of households in which a parent is not at work have poorer health [4-7].

In the UK, a report by Dame Carol Black, published in 2008, stressed the importance of the workplace as a locus for improving well-being, and advocated the introduction of “Fit for Work” services to facilitate earlier return to work for people with health problems [8]. The potential value of early and pro-active rehabilitation was again highlighted in 2009 in a review of health and well-being among employees of the UK National Health Service (NHS) [9]. And more recently the global economic downturn has further increased the pressure on NHS employers to optimise productivity and minimise the costs of absenteeism.

Against this background, University Hospital Southampton NHS Foundation Trust funded the introduction of Return2Health (R2H), a case management programme that optimised joint working between its occupational health (OH) and human resources (HR) departments to minimise both the costs of long-term sickness absence and its adverse impact on health and well-being. The design of the service was influenced by earlier pilot vocational rehabilitation projects in the UK – primarily Pathways to Work (Department for Work and Pensions) [10], and the Condition Management Programme implemented by NHS Lanarkshire in partnership with JobCentre Plus [11].

At the time the service was conceived it was unclear whether and to what extent intensive case management was more effective than standard occupational health services in reducing sickness absence in the healthcare sector. The two initiatives mentioned above catered for mixed client groups, including some NHS employees, and had demonstrated high client satisfaction, with improvements in individual outcome measures (Hospital Anxiety and Depression Score, General Health Questionnaire and Canadian Occupational Performance Measure), as well as in perceived access to employment opportunities. However, neither had made comparisons with a control group. A review of the effectiveness of workplace interventions in workers with musculoskeletal disease that included behavioural interventions, job modifications, exercise therapy and physical therapies, found that most studies indicated a reduction in sickness absence, although the benefits were small and the cost-effectiveness uncertain. [12] Although a comprehensive review of the impact of vocational rehabilitation had found moderate evidence that the use of case management approaches was effective and cost-effective for occupational outcomes [13], controlled evaluations of the impact and cost-effectiveness of such interventions are rare [14,15].

Therefore, robust evaluation was built into the planning of R2H, with additional collection of information at a control hospital trust.

## METHODS

R2H was implemented under the direction of a multi-disciplinary steering group, led by the Head of OH (JS), which included representatives from the main stakeholders (OH professionals, case managers, physiotherapists, HR professionals, managers and employees) and clinicians with relevant expertise (a clinical psychologist, consultant psychiatrist and consultant in chronic pain management). A threat to the success of the initiative was the possibility that R2H might be perceived as forcing absent employees back to work. Therefore, great effort was made to ensure early engagement with and reassurance of staff and managers through presentations and interactive briefings about the health benefits of appropriate early rehabilitation.

The main features of R2H are summarised in Figure 1. It entailed intensive case management, aiming to restore function through a goal-directed and enabling approach. The focus was on managing the response to symptoms according to a bio-psycho-social model. The entry criterion was four weeks of continuous sickness absence, and referral could be initiated by either the employee or his/her line manager.

A core clinical multi-disciplinary team (MDT) was based within the OH service. The MDT comprised case managers, occupational physicians and physiotherapists, who were trained in motivational interviewing and cognitive behavioural therapy (CBT) techniques. Motivational interviewing is a collaborative, person-centred form of guiding to elicit and strengthen motivation for, and discussion about, change. The key techniques are Open-ended questions, Affirmations, Reflections and Summarising or recapping the main points (OARS). The R2H clinical team used this approach to draw out the employee’s ideas, motivations and skills for change. [16] The case managers were occupational health nurses, except for one occupational therapist. They acted as the service gateway and co-ordinators of care. Following an initial assessment, case managers supported employees to plan a series of goals, leading to gradual increase of activities at home in preparation for a return to work. They signposted or provided input from a broad portfolio of support and treatments including on-line CBT, fast-tracked medical or surgical care, physical therapies and advice on exercise. Occupational physicians were involved early in the management of complex cases and in case reviews, including all cases who had not returned to work within 8 weeks. Both case managers and occupational physicians interacted with line managers and human resources advisers, depending on the complexity of the case. Physiotherapists administered early physical treatments for clients with musculoskeletal disorders, but also exercise therapy for all clients – including those with non-musculoskeletal conditions.

A strong emphasis was placed on optimising communication outside the core team, particularly with the line manager, the HR team, and treating clinicians. Evidence of conflicting messages from treating clinicians in respect of increasing activities or return to work was addressed by constructive discussion with general practitioners or specialists (with the employees’ consent). Case managers or occupational physicians gave practical interactive input into the planning of adjustments to work, especially where managers were having difficulty because of operational constraints. Regular active meetings with divisional HR advisors were a key part of the intervention. In providing these inputs, R2H was radically different from the previous OH service, which delivered traditional fitness for work assessments, fast track physiotherapy treatment, counselling, and advice to managers about adjustments to support return-to-work plans, but without active case management. A phased implementation began in January 2009 and was complete by December 2009.

Evaluation was planned into the intervention from the outset, and took the form of a controlled before and after comparison (difference of differences) with a referent neighbouring hospital trust (Salisbury Hospital NHS Foundation Trust), which had a similar style of occupational health service at baseline, and where no intervention was made during the study period. At each trust, data collection spanned the year prior to the intervention (2008), the year during which the service was being developed (2009), and the year after full implementation (2010).

The main source of data was the Electronic Staff Record (ESR), a computerised database, which includes information about sickness absence, and which since 2007 has been widely used in the NHS. With assistance from the HR departments at each trust (intervention and control), we received downloads of anonymised information from the ESR, including numbers of employees (full- and part-time) by year, and for each period of absence beginning in a year of study and lasting for longer than four weeks (4-week absences), the start and finish dates (or information that the absence continued beyond 26 weeks), and the medical reason for absence.

At the intervention trust, we also used a coded employee number to link spells of absence with occupational health records and check whether and at what stage in the absence episode the employee was referred to the R2H service. Other trust databases provided data that were not held on ESR, covering numbers of terminations of employment (including whether they were because of ill-health) by year.

Statistical analysis was carried out using Excel spreadsheets and Stata version 11.1 [17]. We first calculated rates of new 4-week absences for each trust, by calendar year and medical cause, and also the proportions of 4-week absences at the intervention trust that were referred to the R2H service.

We then calculated the proportions of 4-week absences that continued beyond 8 weeks, the changes in this measure from the baseline year (2008) to each of the subsequent years, and the difference in the changes over time between the intervention and the control trust, all with associated 95% confidence intervals (CIs). The difference in changes between 2008 and 2010 was our primary outcome measure, defined before the study began.

As a secondary outcome, we also calculated: a) the mean number of days lost beyond four weeks and up to 26 weeks for all 4-week absences beginning in each calendar year at each trust; b) the change in this measure from 2008 to subsequent years; and c) the difference in these changes over time between the intervention and the control trust, again with associated 95% CIs.

A further analysis compared changes over time in the outcome of 4-week absences at the intervention trust, according to the medical reason for absence. Finally, we examined changes in the numbers of ill-health retirements at the two trusts. As the evaluation used only anonymised data, ethical approval was not required.

## RESULTS

The intervention trust was larger than the control trust with approximately twice as many employees, and a higher proportion of full-time workers (Table 1). Furthermore, its complement of staff grew by approximately 10% over the study period, while that at the control trust remained fairly constant. However, the overall incidence of new 4-week absences was similar at the two trusts over time, with annual rates mostly between 78.0 and 82.5 per 1000 employees. The only exception to this was the middle year of the study (2009) at the control trust when the rate was somewhat lower (72.3 per 1000 employees). At both trusts, musculoskeletal disorders accounted for some 20% of 4-week absences (an unusually low proportion at the intervention trust in 2008 may have reflected errors in coding), but the contribution of mental illness was rather higher at the intervention (12.5% to 16.1%) than at the control trust (8.2% to 10.2%). At the intervention trust, the proportion of 4-week absences referred to the R2H service increased from 34.7% in 2009 to 44.8% in 2010, the highest rates of referral being for absences attributed to mental illness and musculoskeletal disorders.

Table 2 summarises changes in the outcome of 4-week absences at the two trusts over the course of the study period. At the intervention trust, the proportion of 4-week absences that continued beyond 8 weeks fell from 51.7% in 2008 to 49.1% in 2009 and 45.9% in 2010, the reduction in 2010 being statistically significant (5.8%, 95%CI 0.5% to 11.1%). In contrast, the corresponding proportion at the control trust increased between 2008 and 2010 – from 51.2% to 56.1%. Thus, the reduction in the proportion at the intervention trust as compared with the control trust was also statistically significant (a difference of 10.7%, 95%CI 1.5% to 20.0%).

At both trusts, the number of days lost beyond four weeks and up to 26 weeks, when averaged across all 4-week absences, was lower in 2010 than 2008. However, as shown in Table 2, the reduction at the intervention trust was somewhat greater than at the control trust – a mean difference of 1.6 days per absence (95%CI -7.2 to 10.3 days). The proportion of 4-week absences continuing beyond 26 weeks declined to a similar extent at the intervention trust (from 9.0% to 5.7%) as at the control trust (from 10.7% to 7.2%).

Table 3 gives a breakdown of changes in the main outcome measures at the intervention trust according to medical reasons for absence. The greatest changes in the proportion of 4-week absences continuing beyond 8 weeks, and also in mean days lost per absence, were in the “other” and “unknown” categories. In contrast, there appeared to be relatively little impact on absences attributed to mental illness.

Ill-health retirements reduced in both trusts between 2008 and 2010, but the reduction was 20% greater at the intervention trust than at the control trust (this difference was not statistically significant).

## DISCUSSION

This prospective evaluation of a new occupational rehabilitation service demonstrated a statistically significant improvement at the intervention trust as compared with the control trust in the main outcome measure defined a priori, which was the proportion of 4-week absences continuing beyond 8 weeks. There was also a greater reduction at the intervention trust in the mean number of days lost per 4-week absence, but for this measure, the difference from the control trust was not statistically significant. The main improvement in outcomes at the intervention trust was for absences attributed to health problems other than musculoskeletal disorders and mental illness.

Assessing the impact of organisational interventions such as R2H is methodologically challenging. Randomisation is not feasible, and the best that can be done is a controlled before and after comparison of the sort that we made. This leaves open the possibility of unwanted confounding effects. Sickness absence is influenced by many factors, some of which may change over time – e.g. because of a change in the economic climate and threats to job security. However, external influences of this sort might be expected to change similarly at both the intervention and control trusts, and apart from the intervention, we are not aware of any major local changes that would be expected to have impacted differentially on the two trusts.

Another limitation was the quality of data obtained from ESR. In particular, medical reasons for absence may not always have been recorded accurately, especially in 2008 when the system was fairly new.

Against this, a strength of the study was its assessment of outcomes across the whole of the working population covered by the intervention, and not only in those who accessed the service.

As might be expected, the proportion of eligible employees who were referred to the R2H service took some time to build up, and substantial effort went into promoting its use by managers and staff. Despite this, even in 2010, only 45% of qualifying absences led to referral. Complete referral of all workers with 4-week absences would be inappropriate. For example, an employee might be on the threshold of returning to work four weeks into a spell of absence, in which case there would be little value in attendance; the employee might already have a clear timetable for return to work (e.g. after routine elective surgery); or he/she might be seriously ill and incapable of attending the service. Nevertheless, the optimal referral rate is probably rather higher than was achieved, and to this extent the study may have underestimated the potential benefits of the service. On the other hand, there is always likely to be difficulty in achieving high compliance, and in this respect, our findings may be representative of what is achievable in practice.

The service that we offered was of a type that would be practicable and affordable in a real world setting. It was initially planned that it would also provide treatment by clinical psychologists and alternative physical therapists, but because of constraints on resources, the design was subsequently simplified and the intervention never entailed specialist psychology input to cases within the core team.

Offering the intervention when employees had been absent for 4 weeks was a pragmatic choice. Evidence from a review by Waddell and Burton suggested that “In the first 3-6 weeks of sickness absence, the likelihood of recovery and rapid return to work is high, with or without healthcare” [13]. Thus, for most people with shorter spells of absence, the potential for benefit may be limited. However, there was evidence suggesting that structured vocational rehabilitation interventions after 1-6 months sickness absence could be more effective [13].

In calculating durations of absence, we censored episodes at 26 weeks. This was necessary in order to make an unbiased comparison between earlier and later years. However, there was a rationale for the cut-point of 26 weeks in that it was the time point at which employees would normally incur a reduction in sick pay, and after which they would be increasingly likely to leave their job on grounds of ill-health. Moreover, there were no indications that the proportion of absences continuing to 26 weeks changed differently at the intervention as compared with the control trust (Table 2). And the annual number of ill-health retirements also declined more at the intervention than the control trust.

The initial costs of setting up the R2H service, including for staff time, training and equipment, amounted to £174,000 in the first year and £86,000 in the second year. The cost of maintaining the service thereafter is estimated at £57,000 per annum. The observed average saving of 1.6 days per 4-week absence across some 700 such absences per year at the intervention trust corresponds to an annual saving of approximately 1100 person-days. With an annual running cost of £57,000, this equates to a cost of £52 per absence day saved. This can be set against the cost of engaging an agency nurse in the NHS, which was in the order of £17-37 per hour (most of the long-term absences were in nurses and would normally have to be covered by agency staff).

These calculations suggest that the intervention was cost-effective, and are an encouragement both to continue the R2H service in Southampton and to develop other similar services elsewhere. However, there are two important caveats in interpretation. First, although the reduction in 4-week absences continuing beyond 8 weeks was statistically significant, our estimate of mean days of absence that were saved was subject to major statistical uncertainty. Second, the improvement in outcomes at the intervention trust related principally to absences for “other” medical reasons, whereas the highest referral rates to the R2H service were for absences attributed to musculoskeletal disorders or mental illness. This calls into question whether the observed reductions in absence were fully attributable to the intervention.

For these reasons, there would now be value in repeating the R2H intervention at a larger number of hospital trusts, with a similar assessment of outcome.

**KEY POINTS**

* This controlled intervention study suggested that a case management-based rehabilitation programme reduced long-term absence in hospital employees.
* Further research is required to test whether the findings can be replicated on a larger scale.
* Such research should also include a detailed assessment of cost-effectiveness.

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**COMPETING INTERESTS**

**None**

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**Table 1 Employed populations, frequency of four-week absences and prevalence of referral to Return2Health service by hospital trust and year.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Control** |  | **Intervention** |
|  | **2008** | **2009** | **2010** |  | **2008** | **2009** | **2010** |
| **Employed populationa** |  |  |  |  |  |  |  |
|  Full-time | 1827 | 1940 | 1959 |  | 5025 | 5367 | 5540 |
|  Part-time | 2270 | 2183 | 2158 |  | 3193 | 3291 | 3507 |
|  Total | 4097 | 4123 | 4117 |  | 8218 | 8658 | 9047 |
| **Number (rate per 1000 employed) of 4-week absences** |  |  |  |  |  |  |  |
|  Musculoskeletal disorders | 85 (21) | 84 (20) | 74 (18) |  | 84 (10) | 150 (17) | 203 (22) |
|  Mental illness | 34 (8) | 34 (8) | 42 (10) |  | 103 (13) | 127 (15) | 146 (16) |
|  Other | 192 (47) | 164 (40) | 181 (44) |  | 452 (55) | 382 (44) | 335 (37) |
|  Unknown | 27 (7) | 16 (4) | 24 (6) |  | 36 (4) | 44 (5) | 22 (2) |
|  Total | 338 (83) | 298 (72) | 321 (78) |  | 675 (82) | 703 (81) | 706 (78) |
| **Number (%) of 4-week absences referred to Return2Health Service by 6 weeks of going absent** |  |  |  |  |  |  |  |
|  Musculoskeletal disorders |  |  |  |  |  | 61 (41) | 99 (49) |
|  Mental illness |  |  |  |  |  | 53 (42) | 86 (59) |
|  Other  |  |  |  |  |  | 118 (31) | 125 (37) |
|  Unknown |  |  |  |  |  | 12 (27) | 6 (27) |
|  Total |  |  |  |  |  | 244 (35) | 316 (45) |

aSee text for definition

**Table 2 Outcome of four-week absences by hospital trust and year**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Control** |  | **Intervention** |  | **Difference between intervention and control** |
| **2008** |  |  |  |  |  |
| Number (%) of 4-week absences continuing beyond 8 weeks | 173 (51) |  | 349 (52) |  |  |
| Number (%) of 4-week absences continuing beyond 26 weeks | 36 (11 ) |  | 61 (9 ) |  |  |
| Mean days lost beyond 4 weeksa | 51.8 |  | 46.5 |  |  |
| **2009** |  |  |  |  |  |
| Number (%) of 4-week absences continuing beyond 8 weeks  | 150 (50) |  | 345 (49) |  |  |
| Number (%) of 4-week absences continuing beyond 26 weeks | 21 (7) |  | 51 (7) |  |  |
| Reduction from 2008 in percentage of 4-week absences continuing beyond 8 weeks (95%CI) (%) | 0.8 (-6.9 to 8.6) |  | 2.6 (-2.7 to 7.9) |  | 1.8 (-7.6 to 11.2) |
| Mean days lost beyond 4 weeksa | 46.6 |  | 45.2 |  |  |
| Reduction from 2008 in mean days lost beyond 4 weeksa (95%CI) | 5.2 (-2.3 to12.7) |  | 1.3 (-3.6 to 6.2) |  | -3.9 (-12.8 to 5.0) |
| **2010** |  |  |  |  |  |
| Number (%) of 4-week absences continuing beyond 8 weeks  | 180 (56) |  | 324 (46) |  |  |
| Number (%) of 4-week absences continuing beyond 26 weeks | 23 (7) |  | 40 (6 ) |  |  |
| Reduction from 2008 in percentage of 4-week absences continuing beyond 8 weeks (95%CI) (%) | -4.9 (-12.5 to 2.7) |  | 5.8 (0.5 to 11.1) |  | 10.7 (1.5 to 20.0)\* |
| Mean days lost beyond 4 weeksa | 48.5 |  | 41.7 |  |  |
| Reduction from 2008 in mean days lost beyond 4 weeksa(95%CI) | 3.3 (-4.0 to 10.6) |  | 4.9 (0.0 to 9.7)\* |  | 1.6 (-7.2 to 10.3) |

aMean for all 4-week absences

\*p<0.05

**Table 3 Outcome of four-week absences in intervention trust by reason for absence and year**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Musculoskeletal disorders** |  | **Mental illness** |  | **Other** |  | **Unknown** |
| **2008** |  |  |  |  |  |  |  |
| Number (%) of 4-week absences continuing beyond 8 weeks | 43 (51) |  | 55 (53) |  | 230 (51) |  | 21 (58) |
| Mean days lost beyond 4 weeksa | 52.3 |  | 49.6 |  | 44.0 |  | 56.2 |
| **2009** |  |  |  |  |  |  |  |
| Number (%) of 4-week absences continuing beyond 8 weeks  | 84 (56) |  | 70 (55) |  | 176 (46) |  | 15 (34) |
| Reduction from 2008 in percentage of 4-week absences continuing beyond 8 weeks (%) | -4.8 |  | -1.7 |  | 4.8 |  | 24.2\* |
| Mean days lost beyond 4 weeksa | 51.6 |  | 50.2 |  | 42.3 |  | 34.9 |
| Reduction from 2008 in mean days lost beyond 4 weeksa | 0.7 |  | -0.6 |  | 1.7 |  | 21.3\* |
| **2010** |  |  |  |  |  |  |  |
| Number (%) of 4-week absences continuing beyond 8 weeks  | 104 (51) |  | 80 (55) |  | 129 (39) |  | 11 (50)  |
| Reduction from 2008 in percentage of 4-week absences continuing beyond 8 weeks (%) | 0.0 |  | -1.4 |  | 12.4\*\*\* |  | 8.3 |
| Mean days lost beyond 4 weeksa | 47.0 |  | 47.8 |  | 35.7 |  | 42.8 |
| Reduction from 2008 in mean days lost beyond 4 weeksa | 5.3 |  | 1.8 |  | 8.3\*\* |  | 13.4 |

aMean for all 4-week absences

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001

Figure legends:

**Figure 1: Return2Health – main components of the intervention.**