YHEC

York Health Economics Consortium

Providing consultancy and research in health economics for the NHS, pharmaceutical and health care industries since 1986

NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE (NICE)

Workplace Health: Long-Term Sickness Absence and Capability to Work

Draft Report for Consultation

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INVESTORS IN PEOPLE

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Executive Summary

1. INTRODUCTION

The National Institute for Health and Care Excellence (NICE) has asked York Health Economics Consortium (YHEC) to produce an economic evaluation to inform an update on guidelines for 'Workplace health: long-term sickness absence and capability for work'.

2. OBJECTIVES

The objective of the cost-effectiveness review and economic evaluation, as identified in the NICE guideline scope [1], is to identify the following:

1. What interventions, programmes, policies or strategies are cost-effective in preventing or reducing recurrence of short-term sickness absence among employees?
2. What interventions, programmes, policies or strategies are cost effective in reducing the number of employees who move from short- to long-term sickness absence?
3. What interventions, programmes, policies or strategies are cost effective in:
    - Helping employees on long-term sickness absence to return to work?
    - Reducing the recurrence of long-term sickness absence following a return to work?

The specific objective of the economic model is to develop an economic model to model the costs and benefits (i.e. cost savings) to employers who are considering implementing a workplace intervention in order to help employees on short-term and long-term sickness return to work and/or reduce the recurrence of sickness absence.

3. METHODS

In order to approach the research questions, an economic model, in the form of an interactive cost-calculator was developed. The cost calculator is intended for the use of employers who are considering implementing a work place intervention to reduce both short-term and long-term sickness absence. The model allows users to input values and generate bespoke results, specific to their workplace. A base case scenario was modelled using published data as far as possible, and assumptions. Several case studies are considered where data are available.

4. RESULTS AND DISCUSSION

Because of the substantial heterogeneity between different employers and different settings, it is not possible to produce generalisable results. Real world modelled data tended to show that workplace health interventions are likely to be cost saving, but these models were populated with cost and effectiveness estimations and assumptions and, as such, caution is advised when attempting to generalise the findings to other settings. It is recommended that the user friendly model be made available to individual employers so that each company is able to evaluate its own most likely base case.

Acknowledgements

The authors would like to thank the Public Health Advisory Committee members for their comments and suggestions.

Abbreviations and Glossary

ABBREVIATIONS

CIPD	Chartered Institute of Personnel and Development
ICER	Incremental cost-effectiveness ratio
NICE	National Institute for Health and Care Excellence
QALY(s)	Quality-adjusted life year(s)
QoL	Quality of life
YHEC	York Health Economics Consortium

GLOSSARY

Absenteeism	Absence from work
Incremental cost-effectiveness ratio (ICER)	The difference in mean costs in the population of interest divided by the differences in the mean outcomes in the population of interest.
Short-term sickness absence	Sickness absence of less than 4 continual weeks.
Long-term sickness absence	Sickness absence of more than 4 continual weeks.
Presenteeism	The practice of going to work despite illness (physical or mental), often resulting in reduced productivity.
Productivity	A measure of the efficiency of a person at a particular role.
Quality-adjusted life year	A measure of the state of health of an individual or group in which the benefits, length of life, are adjusted to reflect the quality of life. One QALY is equal to 1 year of life in perfect health.

Section 1: Introduction

1.1 BACKGROUND

The National Institute for Health and Care Excellence (NICE) is working with Public Health England to develop the updated workplace health: long-term sickness absence and capability for work scope. The guideline will be used to develop the NICE quality standard for 'Workplace: long-term sickness absence and management'.

The guidance is needed as being in appropriate work is good for health. NICE guidelines identified that 45% of claimants of Employment and Support Allowance who has worked in the 12 months before their claim, had taken a period of sickness absence before they left work [1]. Improving individual or population-health status and functioning is inherently a good thing for individuals and society, and the guidelines should help to ameliorate this aim. The update was initiated because new evidence that had the potential to affect existing guidelines was identified through the surveillance process. One area of the current guidelines (PH19 [2]) will not be updated; UK support programmes for people receiving benefits.

The guidance assesses workplace health interventions aimed at employees that are funded by, or involve, primary care, workplaces or employers. Specifically, the guidance will explore the prevention or reduction of movement from short-term to long-term sickness absence, the facilitation of work after long-term sickness absence, and the reduction of recurring long-term sickness absence.

Related NICE guidance includes:

- Dementia, disability and frailty in later life – mid-life approaches to delay or prevent onset (2015) NICE guideline NG16
- Workplace health: management practices (2015) NICE guideline NG13
- Cardiovascular disease prevention (2010) NICE guideline PH25
- Mental wellbeing at work (2009) NICE guideline PH22
- Physical activity in the workplace (2008) NICE guideline PH13
- Smoking: workplace interventions (2007) PH5
- Persistent pain: assessment and management (expected to be published in January 2020)

The guideline will not include additional recommendations relating to the experience of people using NHS services unless there are specific issues pertaining to long-term sickness absence. Other areas not included in the published guideline or the update include interventions that:

- Are concerned with primary prevention or those short-term absences that are unlikely to be associated with a move from short-term to long-term absence.

- Are targeted at pregnant women exclusively.
- Tackle non-sickness related workplace absences.
- Are delivered outside the workplace or primary care, without involvement of the workplace.
- Involve the clinical diagnosis and management of conditions.
- Look at the effectiveness of private healthcare, benefit system or the claiming of statutory sick pay.

NICE has commissioned York Health Economics Consortium (YHEC) to carry out a systematic cost-effectiveness review and build an economic model. The modelling approach has been based on an evaluation of 'Workplace health for employees with disabilities and long term conditions' [3]. Whilst this guidance was not published the underpinning documents are still relevant to this report, and available on the NICE website [4]. This document outlines the objectives, methods and results of the economic evaluation.

1.2 OBJECTIVES

The objective of the cost-effectiveness review and economic evaluation is to identify the following:

1. What interventions, programmes, policies or strategies are cost-effective in preventing or reducing recurrence of short-term sickness absence among employees?
2. What interventions, programmes, policies or strategies are cost effective in reducing the number of employees who move from short- to long-term sickness absence?
3. What interventions, programmes, policies or strategies are cost effective in:
    - Helping employees on long-term sickness absence to return to work?
    - Reducing the recurrence of long-term sickness absence following a return to work?

The objectives specifically of the economic model are to: develop an economic model to model the costs and benefits (i.e. cost savings) to employers who are considering implementing a workplace intervention in order to help employees on short-term and long-term sickness return to work and/or reduce the recurrence of sickness absence.

Due to the paucity of real life data that could be modelled, only absenteeism has been included in the real-world data analyses. However, in order to reflect some likely real-world scenarios hypothetical scenarios have been modelled.

Section 2 reports the methodology employed and the inputs used in developing the economic model in order to inform the economic recommendations. Section 3 reports the results from the model and Section 4 consists of a discussion of the results and limitations of the approaches taken. Appendix A describes the model functionality.

Section 2: Methodology

PREFACE

It should be noted that quality-adjusted life years QALYs and threshold values are not analysed in this economic evaluation. This is because the main cost (and, therefore, the opportunity cost) falls to the employer, and not the healthcare system. There might be external benefits to the healthcare system from a reduction in sickness absence but, because the direct costs do not fall to the healthcare system, it is not relevant to capture the health benefits measured using QALYs[1]. Similarly, the NICE 'threshold' is not relevant in this analysis because of the same reasons: the cost is not attributed to the healthcare system and so it is not appropriate to measure incremental cost-effectiveness ratios (ICERs) against a threshold.

2.1 MODEL OVERVIEW

Economic modelling was undertaken in order to create a simplified representation of both 'real-world' and 'hypothetical' data that is useful in supporting decision-making. The model synthesizes evidence from appropriate range of sources, (for example, witness testimonies, the effectiveness review and the cost-effectiveness review, and other relevant studies). The data populate an evaluation framework that then derives estimates for the cost-saving associated with an intervention.

Health benefits have not been included in the analyses of this model. This is because it would become too complex to model health benefits for specific health conditions given the time constraints and budget. Equally, in these scenarios, the main cost (and, therefore, opportunity cost) is to the employer and not the healthcare system, meaning that health benefits captured by quality-adjusted life years (QALYs) would be less relevant. For example, any increase in quality of life (QoL) would be captured indirectly by either costs or decreases in sickness absence. QALYs are useful at signifying the opportunity cost within the healthcare system of an intervention in order to explore whether a new intervention will generate more health than it displaces, but this is not relevant to an average employer[1].

[1] It is acknowledged that the NHS is an employer and may therefore wish to include health benefits. The structure of the model could be adapted to include QALYs for that particular setting/scenario.

Figure 2.1 shows the structure of the cost-calculator model. All of the inputs can be varied in order to generate tailored results for different settings and scenarios. The number receiving the intervention is multiplied by each category in the model: the cost of the intervention, the cost of absenteeism, the cost of reduced productivity, and the cost of staff turnover. These figures are then summed in order to produce the net cost impact of the intervention. The model then compares the workplace health intervention with current practice in order to give an overall cost difference.

The user can choose which outcomes to include by using the tick boxes above the outcomes: change in absenteeism, change in productivity and change in staff turnover. For example, if there are no input values for a category, or it is not relevant to the user, it can be removed from the analysis and is not counted towards the cost impact.

There are numerous areas of possible cost savings but the model was limited to the following categories to avoid the over complication of the results and to reflect the likely categories with available data:

- Absenteeism
- Productivity
- Staff turnover
- Placeholders (for the user to add any other relevant outcomes, where data are available)

The model includes an option to select from a one-year time horizon up to a five-year horizon. If a time horizon greater than one year is chosen, the user can then choose:

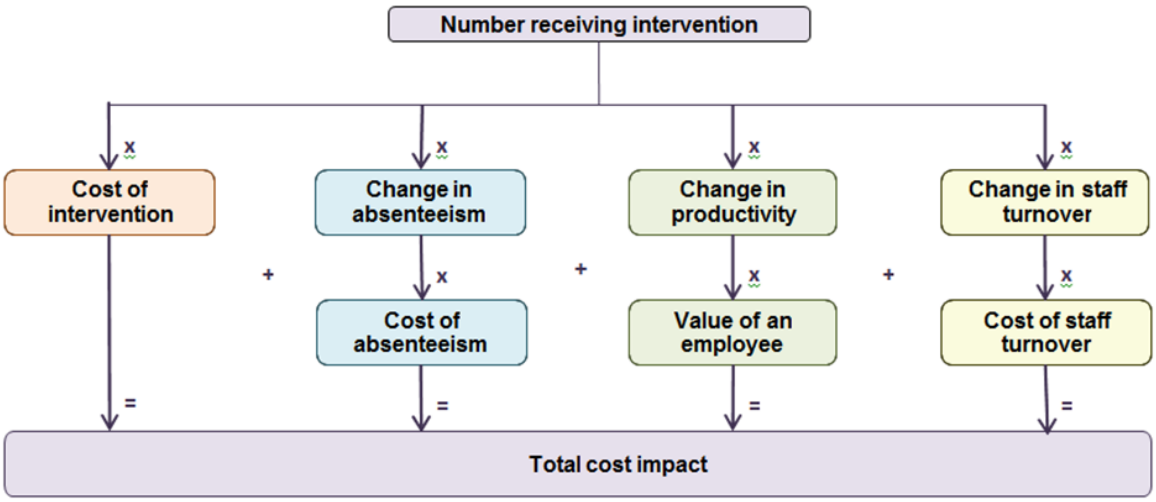
1. To use the same effectiveness estimate each year
2. To vary the percentage difference in effectiveness each year in order to account for the reduction in intervention effects over time
3. To input the effectiveness for each year individually

The longer time horizon may be included as a sensitivity analysis rather than in the base case. When a longer time horizon is selected the results are reported for each year separately and cumulatively. When a longer time horizon is selected, the costs are discounted in line with NICE methods [5].

The model also includes an option to select the type of sickness absence, either ‘short-term’ or ‘long-term’ sickness absence. The base case values change depending on the type of absence chosen.

Appendix A details the model functionality.

Figure 2.1: Model structure



Section 3: Results

3.1 BASE CASE SCENARIO

The following values are used in the base case long-term model (these are described in detail in Section 2.2).

- Intervention cost: £1,000
- Number of employees in model: 30
- Number of days absent per person: 20
- Cost of absenteeism per day: £158.28
- Reduction in absenteeism: 40%
- Annual staff turnover rate: 13.6%
- Cost per case of staff turnover: £15,334
- Reduction in staff turnover: 22.5%
- Time horizon: 1 year

3.2 BASE CASE RESULTS

Table 3.1 below shows the results for the base case model in the first year.

Table 3.1: Long-term Base case results (time horizon: 1 year)

	No intervention	Intervention	Incremental cost
Cost of absenteeism	£94,968	£56,981	-£37,987
Productivity	£1,201,200	£1,201,200	£0
Cost of staff turnover	£62,561	£48,485	-£14,076
Intervention cost	£0	£30,000	£30,000
TOTAL	**£1,358,729**	**£1,336,666**	**-£22,063**

The results in Table 3.1 show that, in the basecase, the hypothetical intervention would be cost saving to an employer. Although the intervention cost £30,000 (i.e. £1,000 for each of the 30 employees), this was more than offset by a 40% reduction in absenteeism and a 22.5% reduction in staff turnover.

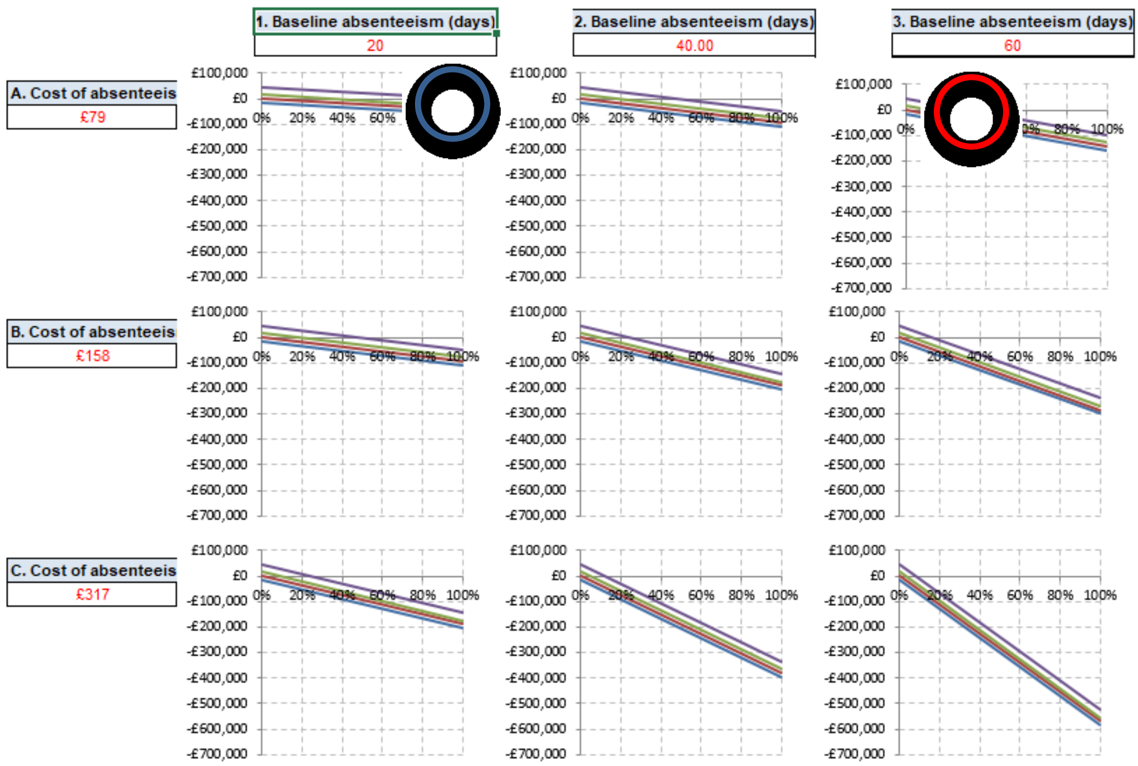
The inputs will vary by organisation and setting and, therefore, these results cannot be generalised to all organisations. Therefore, we assessed the potential impact of varying the key effectiveness and cost assumptions.

3.3 FOUR-WAY SENSITIVITY ANALYSIS

Figure 3.1 to Figure 3.3 show four-way sensitivity analyses for each category within the model using base case data. The four-way sensitivity analysis figures show the results when these key variables are changed. These allow the model user to identify which areas are most relevant to the scenario they are exploring.

Figure 3.1 shows that the higher the baseline rate of absenteeism, the more ‘capacity to benefit’ there is when an intervention is introduced. When the extreme example of a baseline number of 60 sick days is taken (which is three times the reported baseline level of absenteeism), even an intervention costing £2,000 per person could save costs if it was only 30% effective (illustrated by the red circle on Figure 3.1). If the baseline absenteeism is only 20 days, an intervention that costs £2,000 will only be cost saving if it is almost 100% effective (shown by the blue circle on Figure 3.1). This type of threshold analysis could help a stakeholder make the decision as to whether to implement an intervention to reduce absenteeism. If the workforce already has a low rate of long-term absenteeism (20 days) the stakeholder can be reasonably certain that an intervention priced at £2,000 is unlikely to result in cost-savings, unless there is very strong evidence that it will deliver effectiveness levels in excess of 80%. A similar effect is seen with the cost of absenteeism; as the costs increase, there is more capacity to benefit and the savings that can be achieved are substantial.

Figure 3.1: Four-way threshold analysis – Absenteeism



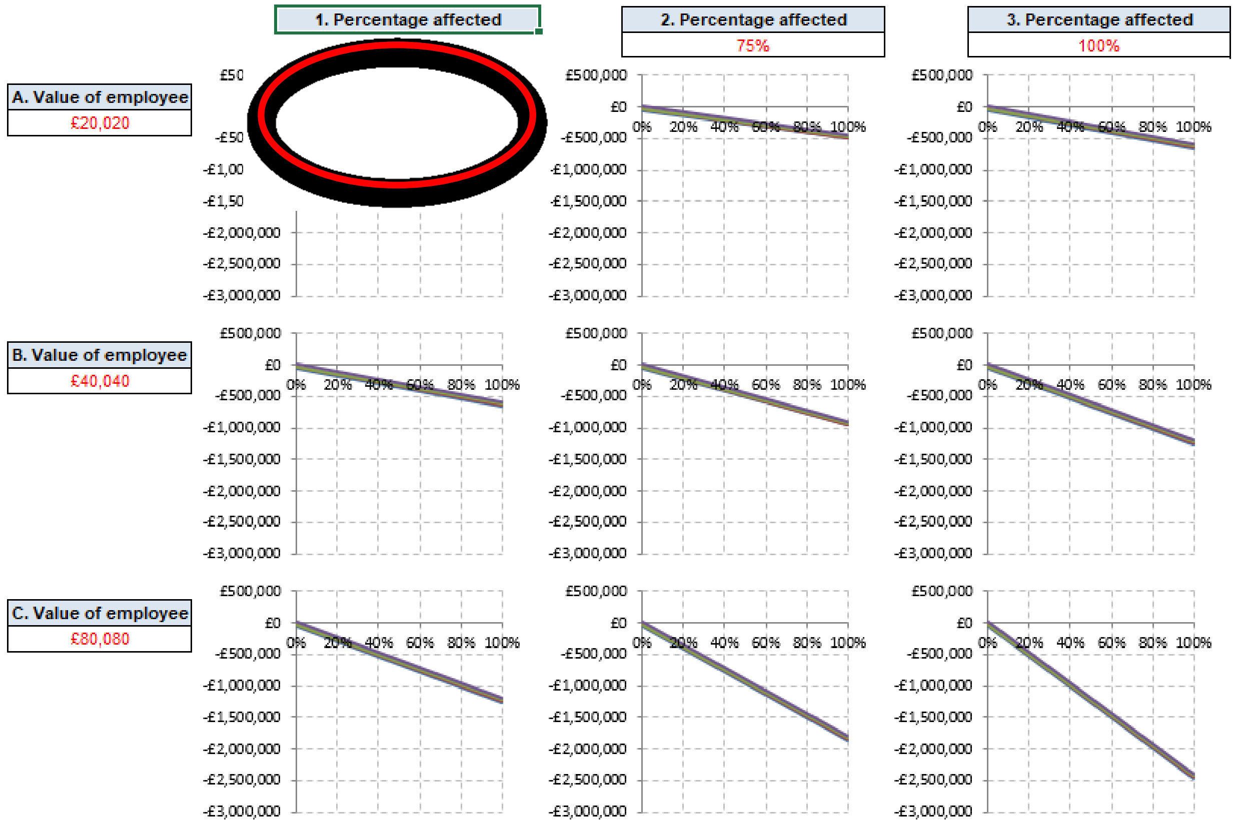
Four-way SA inputs

Cost of intervention per pers	£0	£500	£1,000	£2,000

	Low	Mid	High
Cost of absenteeism	£79.14	£158	£316.56
Baseline absenteeism (days)	20	40	60

The results in Figure 3.2 follow the same pattern as the results in Figure 3.1. This shows that, when the productivity of people receiving the intervention increases, the cost savings to the company increases. In the base case, the improvement in productivity was assumed to be 0%. In this analysis, as the improvement is varied, even with a lower value of employee and 50% of people affected, the cost savings to the company are relatively high, as shown by the red circle on Figure 3.2.

Figure 3.2: Four-way threshold analysis – Productivity



Four-way SA inputs

Cost of intervention per pers	£0	£500	£1,000	£2,000

	Low	Mid	High
Value of employee	£20,020	£40,040	£80,080
Percentage of staff affected	50%	75%	100%

Figure 3.3 shows a similar pattern of results. As the baseline rate and costs of staff turnover increases, the impact of an effective intervention becomes significant.

Figure 3.3: Four-way threshold analysis – Staff turnover

Four-way SA inputs

Cost of intervention per per	£0	£156	£311	£622
	Low	Mid	High	
Cost per case	£7,666.80	£15,334	£30,667.18	
Baseline rate of turnover	7%	14%	27%	

Because there is such a wide range of interventions and organisations, it is not particularly useful to use one single base case model. Therefore, the diagrams above allow stakeholders to look at the information that is most likely to be relevant to their organisation and to the population group that they are targeting (in this case, employees with disabilities or long-term conditions) in order for the results to be applicable and useful. If the ranges captured in these diagrams are not wide enough, the model user can input their own values directly into the model. These graphs allow the stakeholder to assess whether an intervention is likely to result in cost savings in their organisation, and can be used as a tool to assist in choosing between interventions.

3.4 CASE STUDIES

3.4.1 Real-World Case Studies

The following case studies are included to demonstrate the real-life examples of the cost-model calculator and to show the approximate results. The case studies were identified in the effectiveness evidence review, and were included in the report because they contained data that could be adapted to the model inputs. Both Meijer 2006 [6] and Arends 2013 [7] were also included in the cost-effectiveness study. Other studies identified in the effectiveness evidence review did not contain the required data to populate the model inputs and therefore could not be used in this report. The following examples focus only on changes in absenteeism due to a lack of data from the studies on the other outcomes.

Meijer 2006: ***Cost-effectiveness of multidisciplinary treatment in sick-listed patients with upper extremity musculoskeletal disorders: a randomized, controlled trial with one-year follow-up.*** [6].

This study examined the effectiveness and cost-effectiveness of an intervention to aid the return to work of those who were on long-term sickness leave due to musculoskeletal problems, in the Netherlands. The intervention consisted of both psychological and physical sessions for sick-listed patients. Nineteen employees took part in the intervention and on average, there were 30 days lost per person due to sickness absence before the intervention.

The cost of the intervention (per person) was £449. To estimate the cost per person, the total cost of the intervention in Euros (€8,850) was divided by the number of employees undertaking the intervention. The cost was converted to sterling using the average exchange rate from 2006 (0.77). The cost was then inflated to current 2018/2019 prices.

The study reported that there was *no significant difference* between the intervention and control group in terms of reduced sickness days or returning to work. The study was included in order to explore through sensitivity the required level of effectiveness for it to be cost neutral at different levels of baseline absenteeism and costs of absenteeism.

Figure 3.4 and Figure 3.5 show the base case results and the four-way analysis results.

It is possible to analyse the relevant graph from the four-way sensitivity analysis (

Figure 3.4) with the appropriate cost line. Decision makers can decide if it is worthwhile to implement the intervention, from a cost perspective, depending on the various factors (cost of absenteeism, baseline absenteeism, cost of intervention and effectiveness of the intervention).

Figure 3.4: Case study results

Time horizon for results	1 year

	No intervention	Intervention	Incremental cost
Cost of absenteeism	£90,220	£90,220	£0
Productivity	£0	£0	£0
Cost of staff turnover	£0	£0	£0
Intervention cost	£0	£8,531	£8,531
Total	**£90,220**	**£98,751**	**£8,531**

Please note that these results are for LTSA

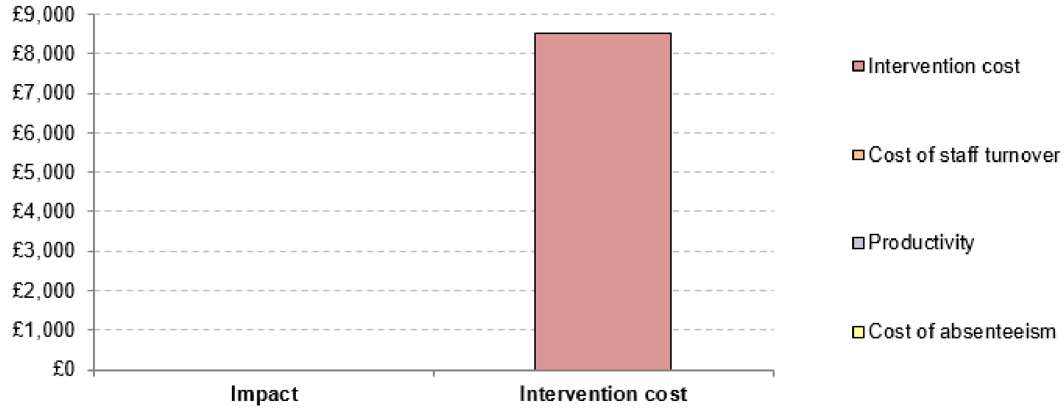
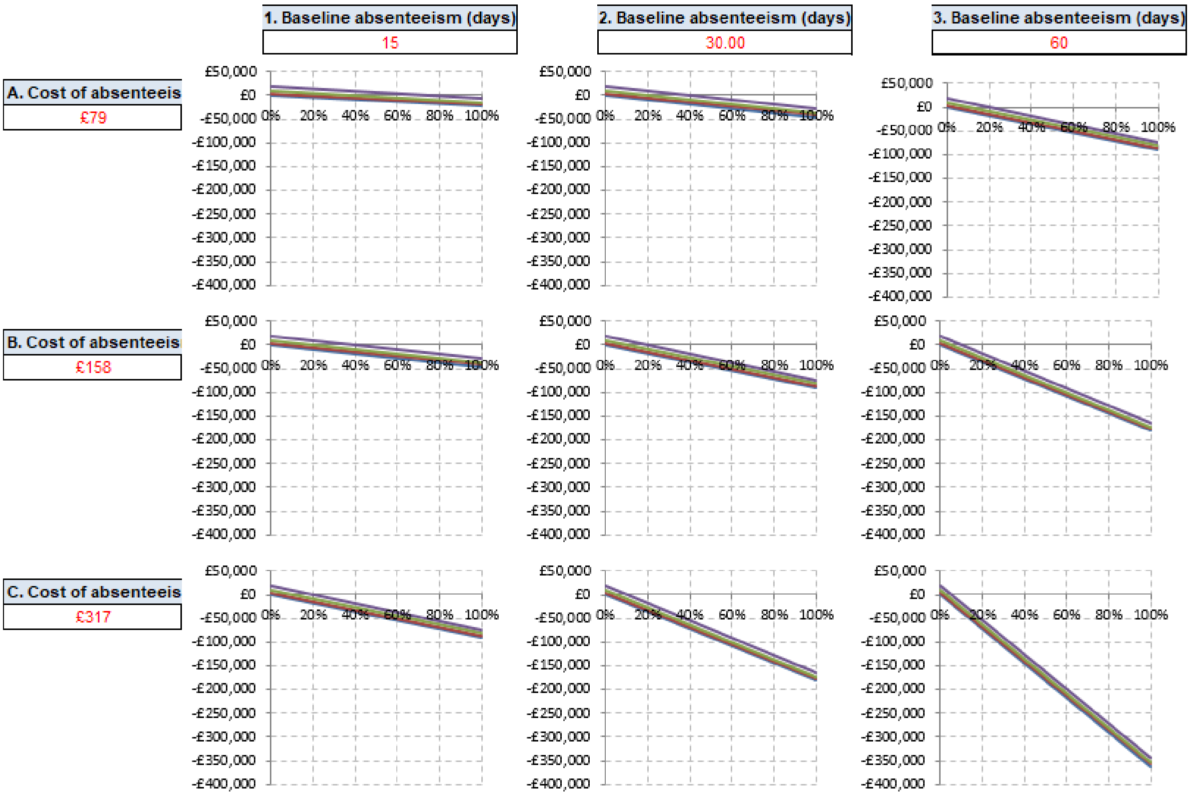


Figure 3.5: Four-way sensitivity analysis



Lindstrom 1992: ***The effect of graded activity on patients with subacute low back pain: a randomized prospective clinical study with an operant-conditioning behavioral approach.*** [8].

This paper examined whether graded activity was effective in returning blue-collar workers, off work for more than 8 weeks due to lower back pain, to full occupational function. The intervention consisted of a graded activity programme, which involved a measurement of the functional ability of the worker, a visit to the employee's workplace, education about the back and an exercise programme. Fifty-one employees undertook the intervention and an average of 40 days per person was lost before the intervention.

It was estimated that the cost of the intervention per person was £608.71. This was generated by disaggregating the intervention into approximate resource use. It was assumed that there were two occupational therapist sessions, a group physiotherapist session and an individual exercise programme. These costs were taken from NHS Reference costs [9]: an occupational therapist costs £81 per session (HRG code: A06A1). A group physiotherapist session costs £48 per session (HRG code: A08AG) and an exercise programme for targeted musculoskeletal disorders costs £399 (HRG code: VC24Z). These costs were then multiplied by their frequency within the intervention and then divided by the number of employees undertaking the intervention.

The effectiveness of the intervention was estimated at 38%. The intervention group experienced 12.1 weeks of average sick leave and the control group experienced 19.6 weeks sickness absence. The results of the base case and the four-way sensitivity analysis can be seen in Figure 3.6 and Figure 3.7 respectively.

The case study results (Figure 3.6) show that, with an effectiveness of 38%, the total cost saving of implementing the intervention is £91,654. The four-way sensitivity analysis shows the possible variance in input parameters and the likely effect the variance would have on the cost saving level of effectiveness of the intervention. For example, if the baseline rate of absenteeism was lowered to 20 days and the cost of absenteeism was also lowered to £79 (instead of £158), there would be a decrease in the cost saving of the intervention. A more expensive intervention would have to be a lot more effective to be considered even slightly cost saving. A cost-free intervention is always cost saving in this scenario, but less so than if the baseline rate of absenteeism was higher and the cost of absenteeism was higher.

Figure 3.6: Case study results

Time horizon for results	1 year

	No intervention	Intervention	Incremental cost
Cost of absenteeism	£322,891	£200,193	-£122,699
Productivity	£0	£0	£0
Cost of staff turnover	£0	£0	£0
Intervention cost	£0	£31,044	£31,044
Total	**£322,891**	**£231,237**	**-£91,654**

Please note that these results are for STSA

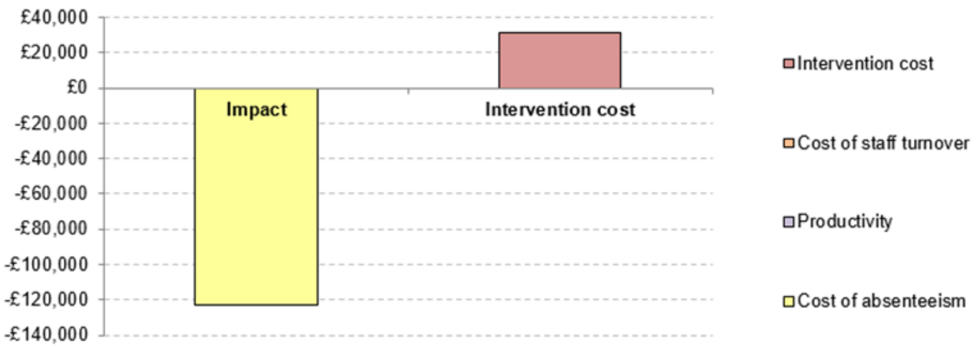
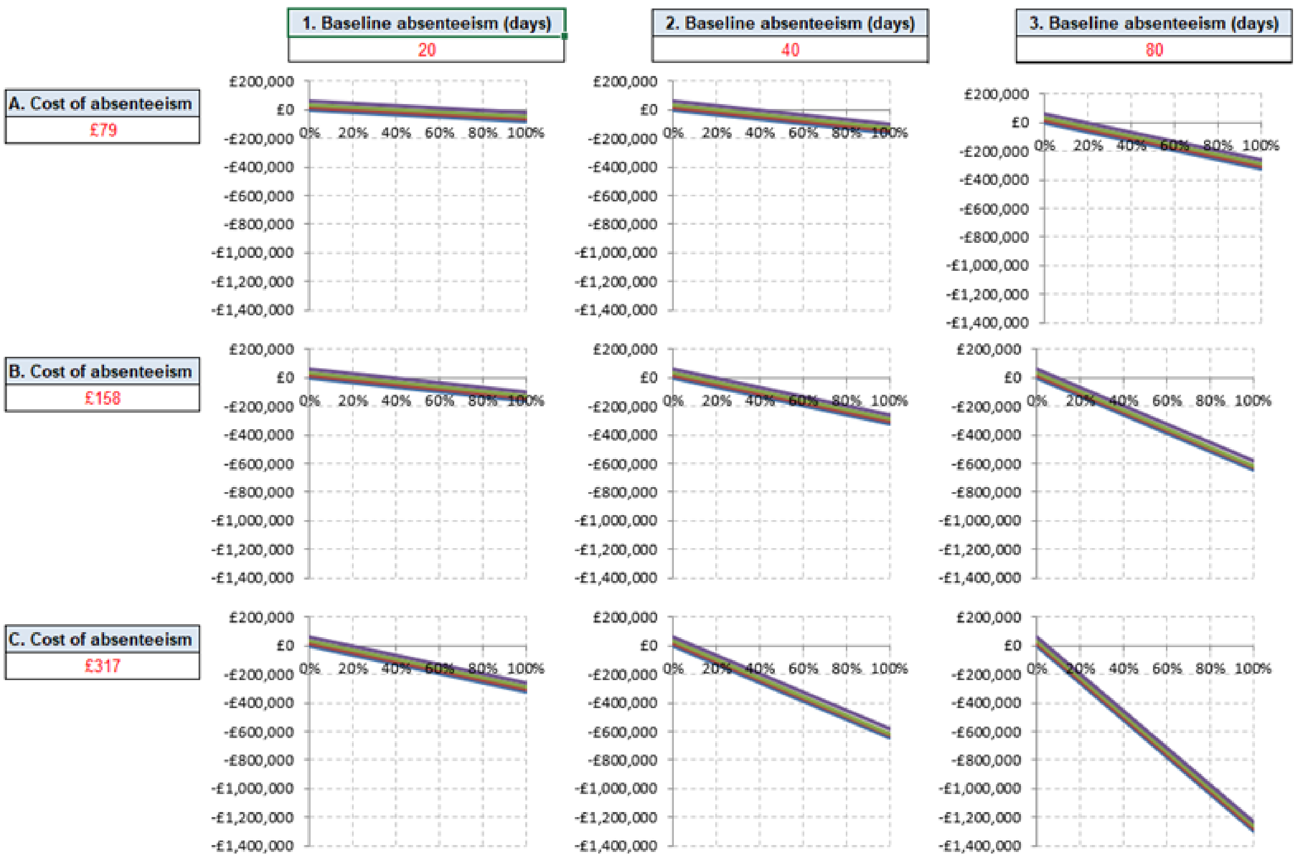


Figure 3.7: Four-way sensitivity analysis



Van den Hout 2003: *Secondary prevention of work-related disability in nonspecific low back pain: does problem-solving therapy help? A randomized clinical trial.* [10].

This paper examined whether two interventions given to employees in the Netherlands, who had been on sick leave for more than six weeks because of low back pain, were effective in reducing sick leave and improving work status. The two interventions were GAPS (graded activity and problem-solving therapy) and GAGE (graded activity and group education). The problem-solving was based around cognitive behavioural therapy and the group education about back pain and the back.

Forty-five employees undertook the GAPS intervention and thirty-nine employees undertook the GAGE intervention. The average number of days lost per person before the intervention was 60. The cost estimate per person for the GAPS intervention was £2,126 and for the GAGE intervention was £2,132.67. Both figures incorporated graded activity that was valued at £1,386 in an UK setting. All costs came from NHS Reference costs [9]. This was calculated by estimating the costs of an occupational therapist offering 15 1-hour training sessions at a cost of £81 each (HRG code: A06A1). Three additional physiotherapist sessions were calculated at £57 each (HRG code: A08A1). The GAPS figure had an additional cost to the graded activity cost of cognitive behavioural therapy sessions valued at £74 each (HRG code: A01AG). The GAGE figure had an additional cost to the graded activity cost of 10 90-minute group education sessions. This was calculated by averaging the costs of the three available costs of resource use (physiotherapist, occupational therapist and a therapist) mentioned in the study. This average total was multiplied by 10 in order to capture the 10 lessons.

The effectiveness of the GAPS intervention was estimated at 40% and the effectiveness of the GAGE intervention was estimated at 8%. The following figures used to estimate the effectiveness are assumptions based on the data as several time periods were used: 1-0.5 year pre-treatment, 0.5-0 year pre-treatment, 0-0.5 year post-treatment and 0.5-1 year post-treatment. The time periods for both GAPS and GAGE that returned the highest figure for pre-treatment days of sick leave were used to estimate the sick days pre-intervention as it was assumed that the higher days of sickness absence were reflective of the back pain affecting the worker's role. This figure for both GAPS and GAGE was from the second period. The second period post-treatment was used to estimate the reduction in sick days, post-treatment, in order to show the effectiveness of the intervention over a year. The GAPS figure was calculated by finding the reduction in the days of sickness absence experienced by workers before and after the intervention. Before the intervention on average workers experienced 30.8 sick days every 6 months. After the intervention, this had reduced to 18.5 sick days. The GAGE figure was calculated in the same way. Before the intervention on average workers experienced 41.3 sick days every 6 months. After the intervention, this had reduced to 37.9 sick days.

Base case results can be seen for both the GAPS intervention and the GAGE intervention in Figure 3.8 and Figure 3.9, respectively.

Figure 3.10 and Figure 3.11 show the four-way sensitivity analysis for GAPS and GAGE, respectively. The GAPS intervention was more effective and slightly cheaper than the GAGE intervention. This is reflected in the cost saving of £89,518 compared to the GAPS intervention that cost £51,075. The four-way sensitivity analysis shows the variation in the parameters. This can be used by the decision maker to explore the potential change in results if the input estimates changed.

Figure 3.8: Base case results (GAPS)

Time horizon for results	1 year

	No intervention	Intervention	Incremental cost
Cost of absenteeism	£462,969	£277,781	-£185,188
Productivity	£0	£0	£0
Cost of staff turnover	£0	£0	£0
Intervention cost	£0	£95,670	£95,670
Total	**£462,969**	**£373,451**	**-£89,518**

Please note that these results are for STSA

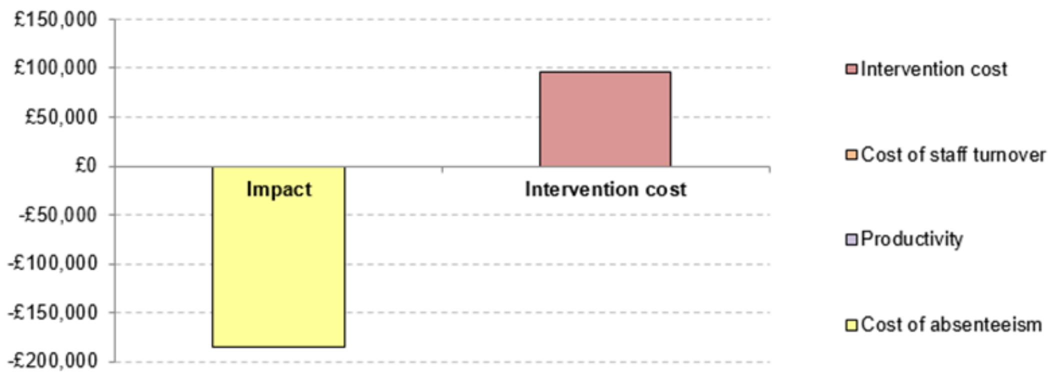


Figure 3.9: Base case results (GAGE)

Time horizon for results	1 year

	No intervention	Intervention	Incremental cost
Cost of absenteeism	£401,240	£369,141	-£32,099
Productivity	£0	£0	£0
Cost of staff turnover	£0	£0	£0
Intervention cost	£0	£83,174	£83,174
Total	**£401,240**	**£452,315**	**£51,075**

Please note that these results are for STSA

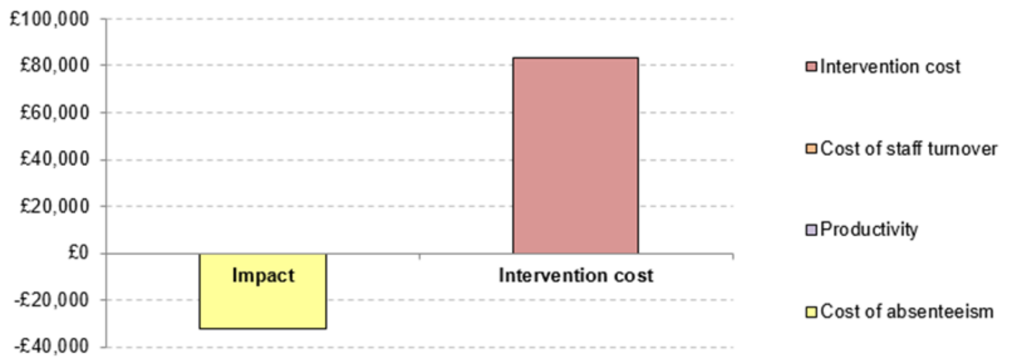


Figure 3.10: Four-way sensitivity analysis (GAPS)

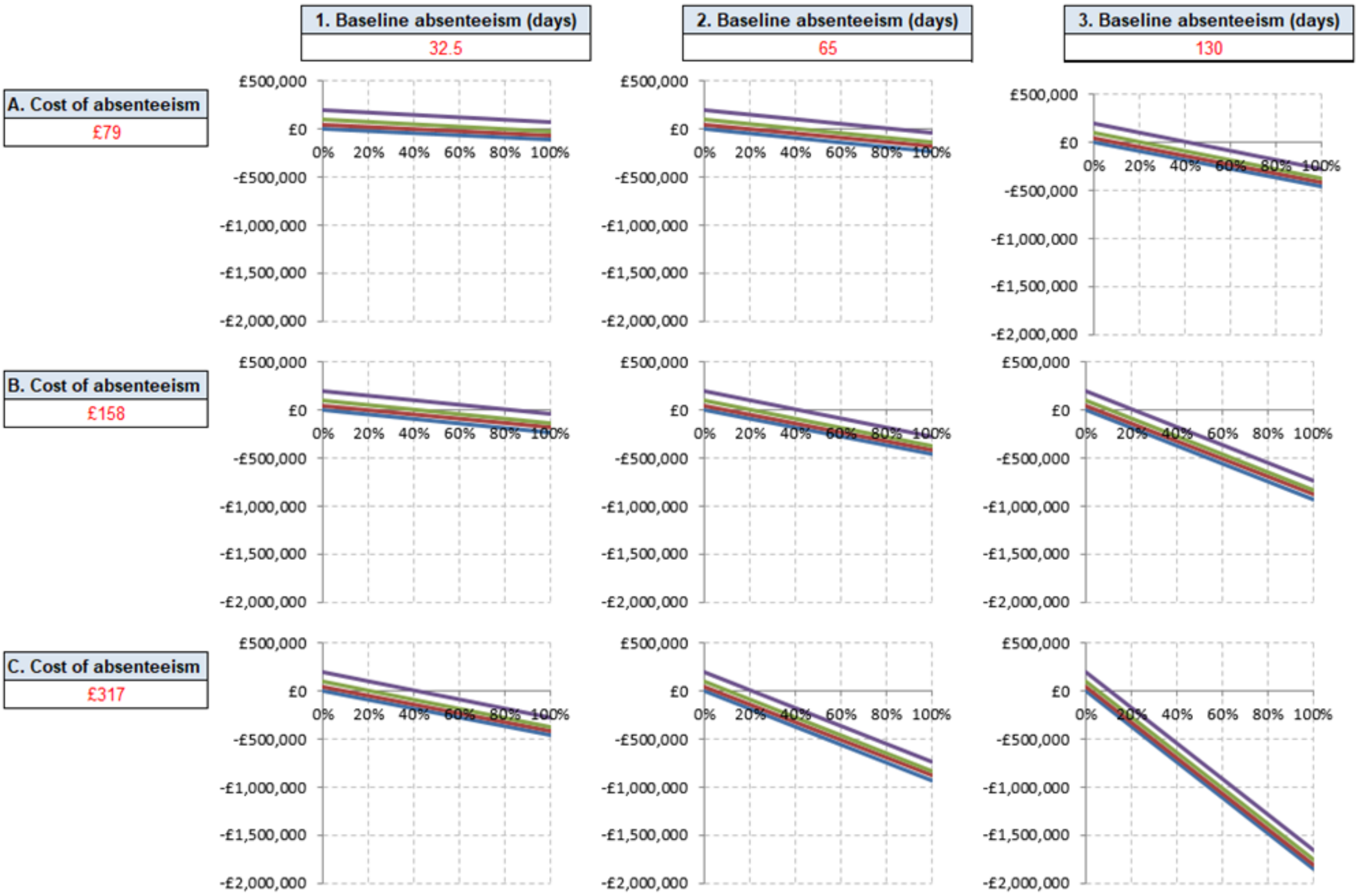
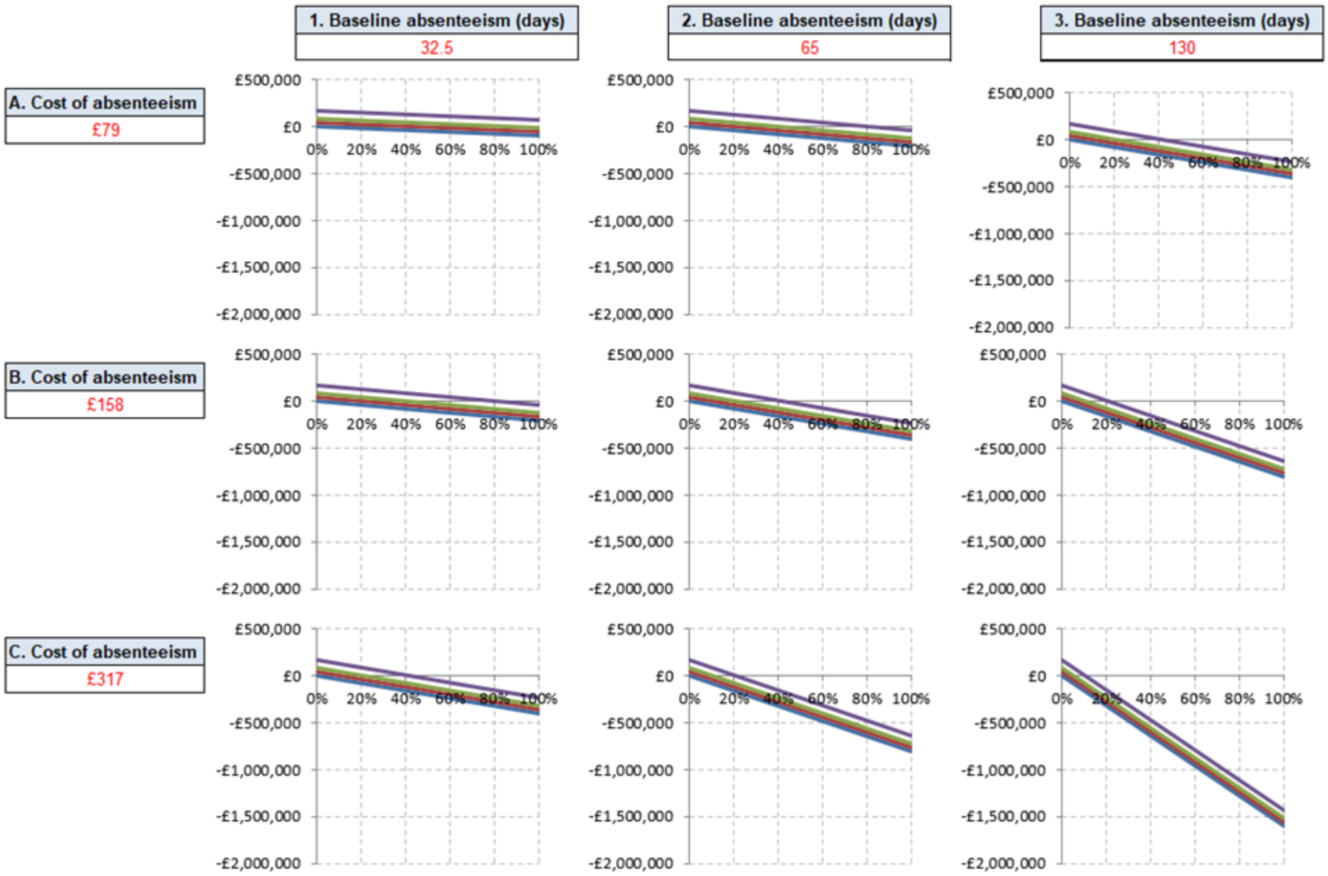


Figure 3.11: Four-way sensitivity analysis (GAGE)



Arends 2014: *Prevention of recurrent sickness absence in workers with common mental disorders: results of a cluster-randomised controlled trial.* [7].

This study examined the effects of an intervention ('Stimulating Healthy participation And Relapse Prevention at work' (SHARP-at work)) to aid workers with common mental disorders (CMDs) to return to work after sickness absence related to CMDs. SHARP-at work consists of a problem-solving process and implementing any solutions.

One hundred and fifty-eight employees undertook the intervention and before the intervention there was an average of 15 days lost per person due to sickness absence. The cost estimate per person for the intervention was £364.50. All costs were taken from NHS reference costs [9]. The cost estimate per person was calculated by using the cost of a singular occupational therapist once, £81 (HRG code: A06A1), in order to examine the problems faced at work and discover any solutions to the identified problems. It was estimated that there were between two and five occupational physician consultations too. Therefore, an average was taken and these were costed at the same price as the occupation therapist. The effectiveness estimate was 44% that was calculated using the figures from the study on reduction in sick days: the control group returned to sickness absence after 253 days compared with the intervention group who took 365 days.

The base case results can be seen in Figure 3.12 and the four-way sensitivity analysis can be seen in Figure 3.13. The intervention was estimated to save £107,463 in costs.

Figure 3.12: Base case results

Time horizon for results	1 year

	No intervention	Intervention	Incremental cost
Cost of absenteeism	£375,124	£210,069	-£165,054
Productivity	£0	£0	£0
Cost of staff turnover	£0	£0	£0
Intervention cost	£0	£57,591	£57,591
Total	**£375,124**	**£267,660**	**-£107,463**

Please note that these results are for STSA

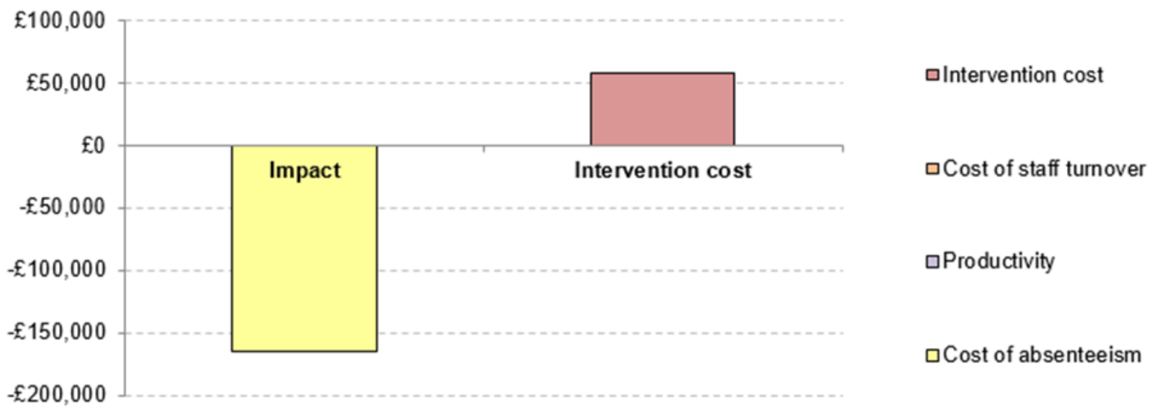
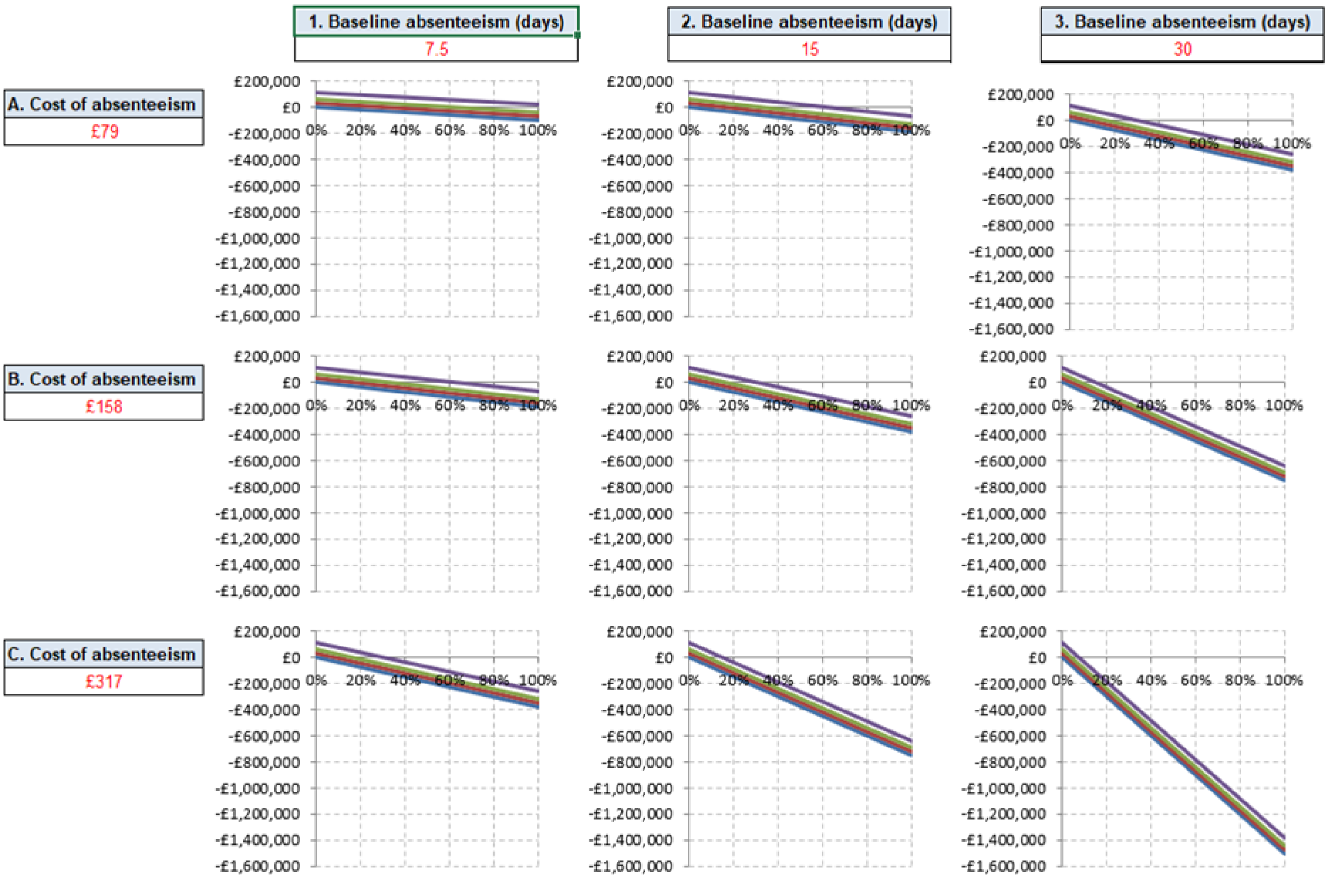


Figure 3.13: Four-way sensitivity analysis



Section 4: Discussion

4.1 DISCUSSION

Workplace health interventions rarely target just one aspect, such as health, that can influence sickness absence; an intervention to reduce sickness absence is likely to also increase productivity, wellbeing and reduce the rate of staff turnover. In addition to the factors that have been captured in the model that might influence sickness absence an intervention will have different effects on each of these outcomes depending on a number of factors, for example levels of seniority and baseline measures. The challenge in modelling this is to show that each individual intervention will have a different level of impact on each outcome and other outcomes that could not be modelled, such as the health benefits to the employee. Evidently, an intervention will have also different outcomes, depending on the organisation and multiple external factors, some of which could also not be modelled.

It is clear from the data modelled here that there can be variations in the results of the different interventions in different settings. The results depend on a myriad of factors and, therefore, generalising results is difficult when each organisation has its own unique characteristics. Some of the factors that can affect the results include the size of the organisation, the baseline rates of staff turnover, cost of absenteeism and underlying absenteeism rates. External factors such as an individual's personal life, the labour market and the culture of the workplace can also have a bearing on the results.

Because of this uncertainty, the economic model described in this report has been designed to be as flexible as possible. It has been developed into a user friendly cost-calculator to allow organisations to add their own specific inputs. Some of these input values are likely to be estimates and, as such, inbuilt sensitivity analysis has been included into the model so that users can see how changes in their parameters will affect their results.

Base case results have been included in the model to give an idea of the expectant cost-savings from implementing an intervention. In general, it can be assumed that a company with high turnover costs or costs of absenteeism will likely benefit from an intervention to reduce sickness absence, particularly if the intervention is effective and less expensive than the overall costs of absenteeism or replacing a worker. The reverse is also true. For example, an organisation with low baseline turnover costs or low levels of absenteeism will find it more difficult to realise cost savings by implementing an intervention aimed at reducing sickness absence, though this does not mean that other factors could also benefit the organisation. Employers may be interested in factors other than pure cost savings. The overall willingness to pay for an intervention by an organisation is important: there is no requirement for the intervention to be cost saving if the organisation is willing to pay for an intervention that will benefit the workers and the organisation itself.

4.2 LIMITATIONS

Limitations within the model and the case study analysis include a paucity of data from real world case studies. The real-life case studies used within the report were populated with a combination of 'real' data and assumptions/approximations, which makes their conclusions uncertain. Sensitivity analysis was performed on the results in order to show the probable dispersion of results given the potential for parameter changes.

The uncertainty surrounding the ways in which reducing sickness absence impacts on other areas of work and an employee's personal life is difficult to model. This is a particularly pertinent limitation when considering the multiple different interventions that could be implemented, and the various levels of effectiveness that the interventions will have on different aspects of sickness absence and wellbeing. In general, this means that the analysis in this study is likely to *underestimate* the true benefits of each intervention.

4.3 CONCLUSION

It is difficult to draw any broad conclusions from the base case analysis that evaluate specific scenarios and interventions aimed at specific populations, since there is substantial heterogeneity in the employment sector. However, it is recommended that the model should be made available on the NICE website as a cost-calculator tool that can be used by individual organisations to aid their decision making.

It is important to note that, although the model might not show any specific cost saving from an intervention, if an intervention does help an employee return to work there are benefits to the employee that cannot be easily quantified in a model, such as quality of life and monetary benefits (for example, pay and career progression). In addition, there are likely to be numerous positive externalities to implementing interventions in the workplace that can have positive ramifications across society. This could include benefits to the health care system and local authorities. These factors are not quantified in the model due to both the complexity in modelling these benefits and the likelihood that the benefits would differ from not just each organisation but also each individual employee. As a result, it is likely that the results outlined in this report and within the model might represent the *minimum* benefit that is likely to be achieved through each intervention and the benefits are likely to be greater.

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Appendix A: Model User Guide

MODEL PRESENTATION

The cost calculator is likely to be made available on the NICE website in order to allow as many users as possible to access it. To facilitate a user friendly and flexible model, relevant to a user's needs the title sheet, shown in Figure A.1 of the model contains explanatory text outlining instructions and limitations about the model. Red marks in the corner of cells display comments when the user hovers over them, often about the source of the input data populating the cell. Examples are shown in Figure A.2.

Figure A.1: Model title sheet

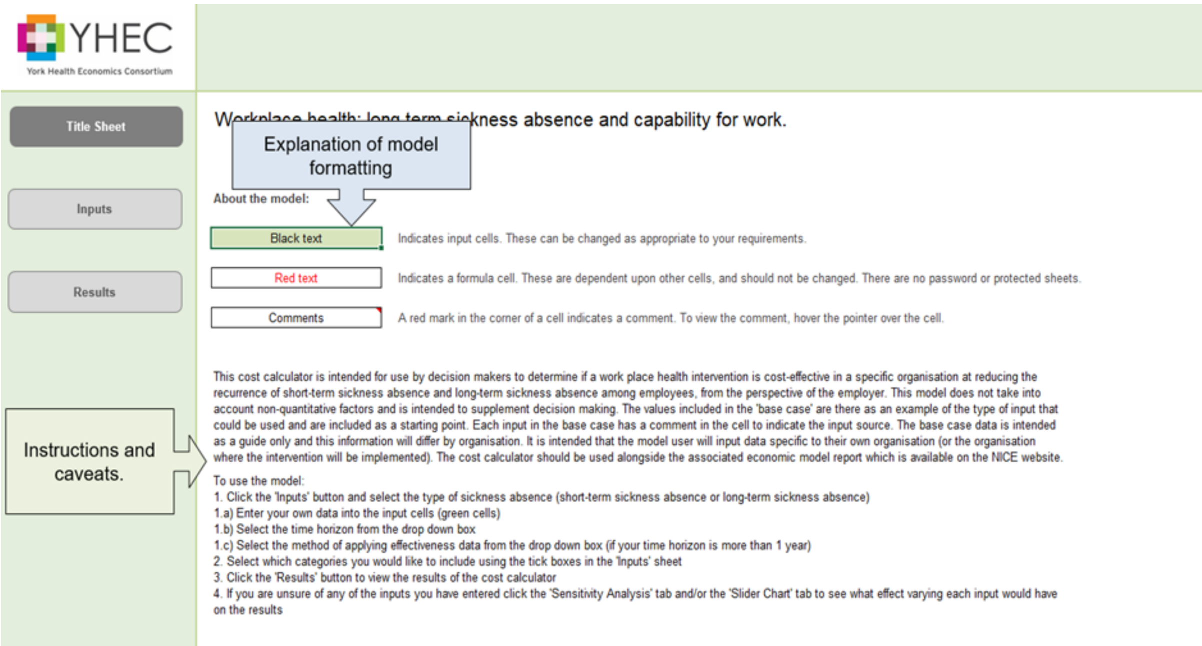
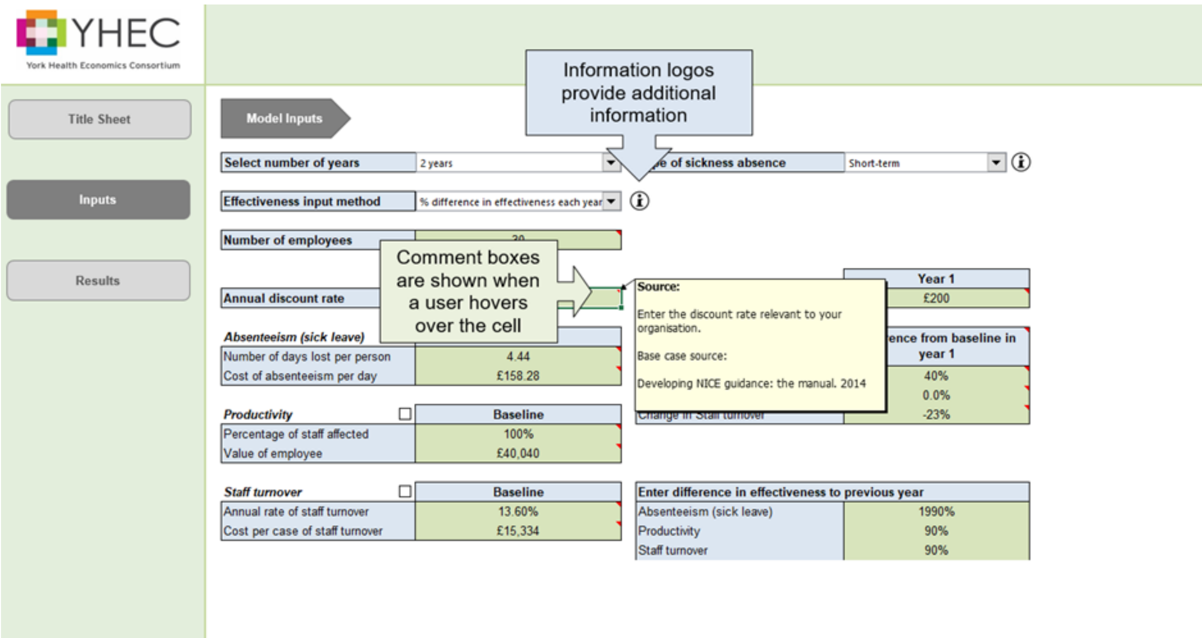


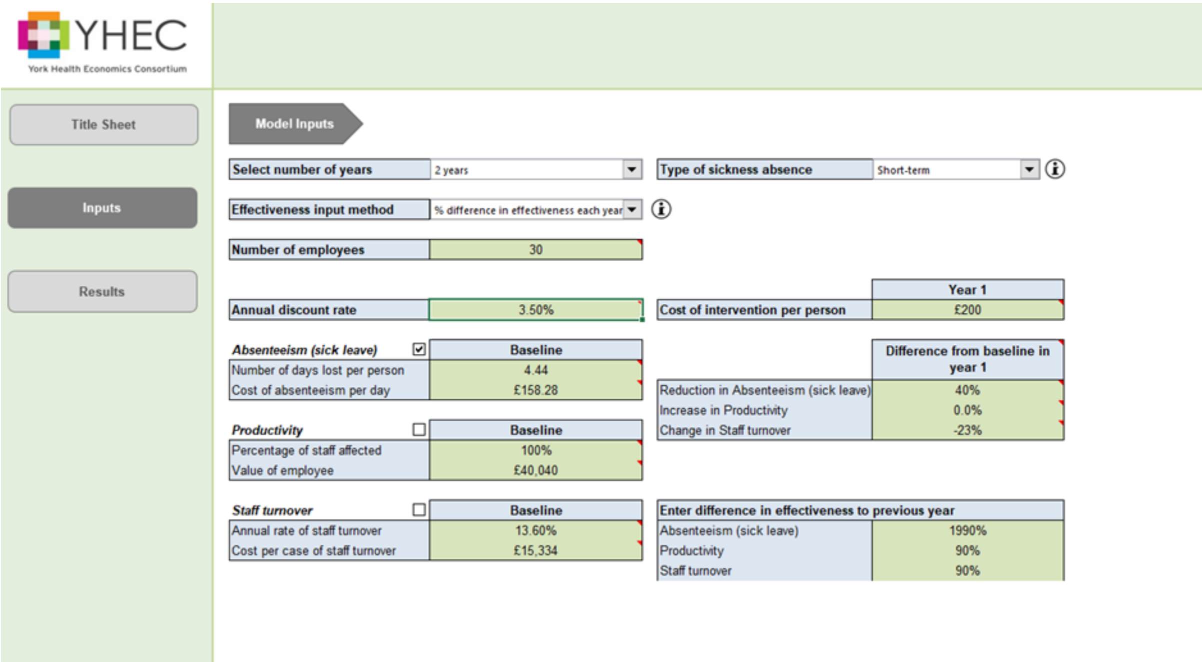
Figure A.2: Model input sheet



INPUTS

Figure A.3 shows the layout of the inputs sheet and how the user can choose between short-term and long-term sickness absence and can also select which of the five categories to include in the analysis. The user is able to replace the base case values with their own values in the green cells, the results will automatically update. Despite the use of the most up to date inputs, it is recommended that the user enter their own data to ensure the most realistic result is generated relevant to their organisation. The base case data is unlikely to reflect individual user's organisation due to the variance in setting.

Figure A.3: Model inputs



Base Case Inputs

The costs outlined below have been updated from a similar review 'Workplace Health: policies and approaches to support employees with disabilities and long-term conditions: economic evaluation' [3]. Most of the inputs are representative of the general population and not specific to any workplace. The inputs in the base case are placeholders and it is recommended that model users input their own data.

Cost of intervention

For short-term sickness absence, we assumed a base case cost of £200, though this is varied substantially in the sensitivity analysis. For long-term sickness absence, the costs was assumed to be £1,000 in order to reflect the likelihood that an intervention aimed at reducing long-term sickness absence will require more resources over a longer period of time. These inputs are varied in the sensitivity analysis, since all interventions will have different costs. The above values are used only in the illustrative base case. Case studies are provided later on, which include more specific costs related to individual interventions.

Absenteeism

Absenteeism is defined as the number of days away from work due to sickness, either mental or physical. Table A.1 outlines the absenteeism parameters. Long-term sickness is defined by the government as a sickness absence lasting for more than four weeks and, as such, the assumption in the long-term base case scenario is that the number of days lost per person is 20. [11]. This is varied in sensitivity analysis.

Table A.1: Absenteeism inputs

Parameter	Input value	Source	Notes
Number of days lost per person short-term (baseline)	4.44	Office for National Statistics (ONS). Sickness Absence in the Labour Market. 2018 [12] ONS. UK Labour Marker: Statistical Bulletin. 2018 [13]	ONS sickness absence rates weighted by the number employed aged 16 to 65 and 65+. Those aged over 65 were included as some people over the age of 65 still work and this was reflected in the figures. Sickness absence rate applied to 253 working days
Number of days lost per person long-term (baseline)	20	Minimum 4 weeks of sickness absence to be considered long-term sickness absence	
Cost of absenteeism per day	£158.28	Mental Health at Work: Developing the business case. The Sainsbury Centre for Mental Health; 2007 [14] ONS consumer price index (CPI) indices [15]	£120 from the Sainsbury report expressed in 2018 prices. The figure represented sickness absence costs across all health conditions.
Reduction in absenteeism	40%	Building the case for wellness. 2008 [16]	Analysis of 55 firms. Reduction in turnover ranged from 10% to 97% with the reported average around 30% to 40%

Productivity

Productivity is defined as the measure of the efficiency of an employee. In order to quantify this in the model it has been included as the value that an employee adds to an organisation. Productivity can be influenced by many external factors such as an employee's satisfaction in the workplace, the impact of other market forces and innovation. Productivity is influenced by other factors in the model, such as turnover and absenteeism, but the definition of productivity here is productivity *over and above* that which is already accounted for by absenteeism and staff turnover. When inputting productivity data into this model, the model user can either assume that the impact is for the whole organisation and give an average improvement or apply productivity as an impact on an individual (the parameters required for this are 'percentage of staff affected' and 'increase in productivity'). In the base case, the percentage of staff affected is 100% and this refers to those employees that have directly received an intervention. The increase in productivity refers to those that have received an intervention, rather than an increase in the whole workforce.

The productivity parameters included in the model are outlined in Table A.2. As with other inputs, these are varied in the sensitivity analysis to reflect different settings and scenarios.

Table A.2: Productivity inputs

Parameter	Input value	Source	Notes
Percentage of staff affected (baseline)	100%	Assumption. Productivity affects 100% of staff because all staff have some level of productivity (which is assumed to be below 100% and could be improved)	Applies to all staff
Value of employee	£40,040	ONS. Median full time gross annual earnings. 2017 [17] plus 40% to represent 'on' costs	40% is added to earnings to represent the actual value to the company based on the figure used in previous guidance [3] reflecting that employees must be worth at least as much as their financial cost to the employer and, most likely, considerably more
Increase in productivity	0.0%	Assumption	

Staff turnover

Staff (or employee) turnover is defined as the proportion of employees who leave a workplace over a set period of time (usually a year). There are several costs related to staff turnover including legal fees, recruitment costs, training a new employee, and the overall impact on productivity. There will be different costs to an organisation dependent on many factors including the seniority of the employee, the length of time an employee has been at an organisation and the length of time it takes to replace them. Although these factors have not been explicitly modelled in the base case it has been assumed that the cost per case of staff turnover, and the extensive sensitivity analysis performed, will cover these separate costs.

The staff turnover parameters included in the model are outlines in Table A.3.

Table A.3: Staff turnover inputs

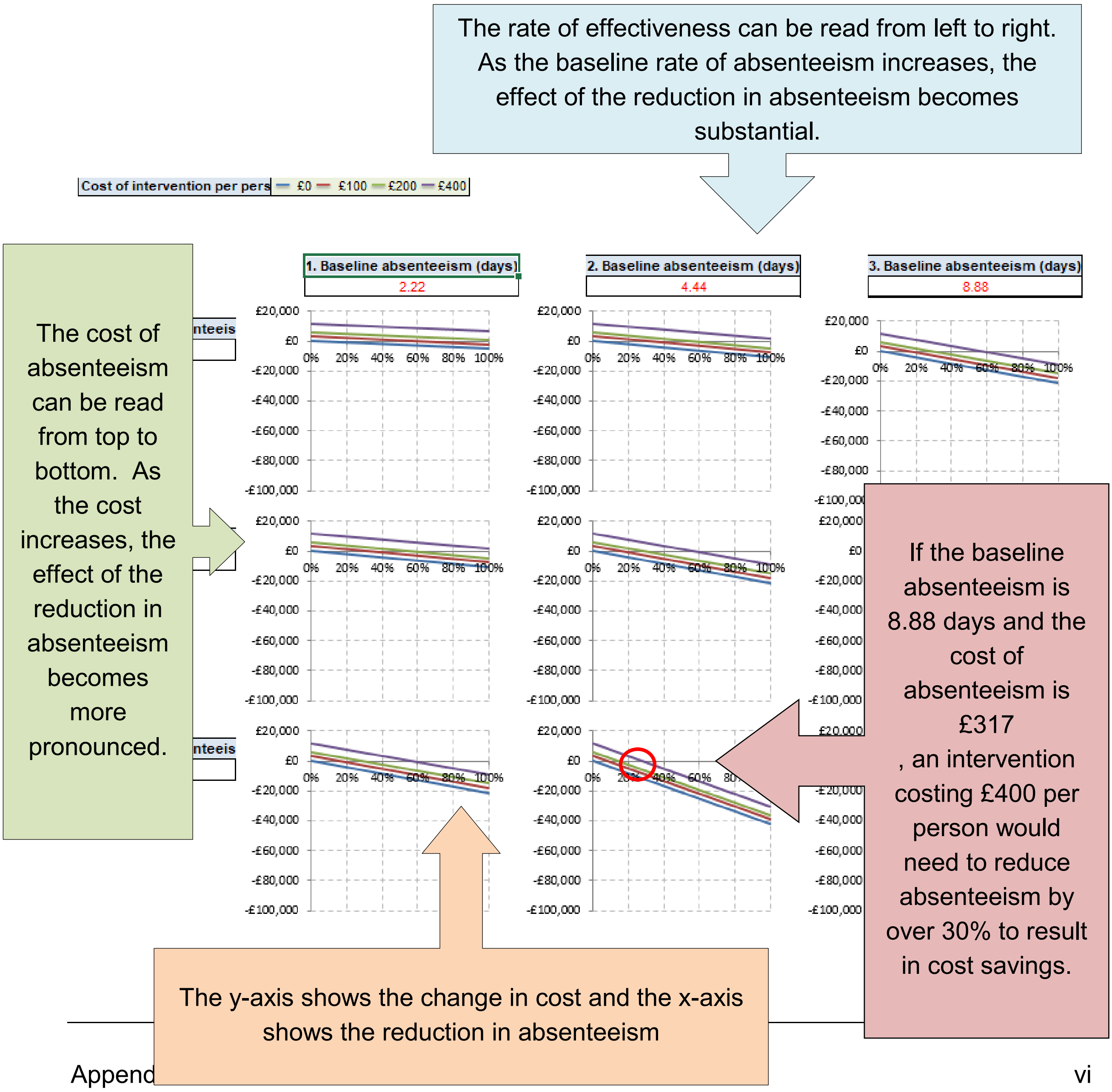
Parameter	Input value	Source	Notes
Annual rate of staff turnover (baseline)	13.60%	CIPD, 2013 [18]	CIPD estimate of median rate of staff turnover. It is noted in the report that median figures do mask considerable differences between organisations
Cost per case of staff turnover	£15,334	Mental Health at Work: Developing the business case. The Sainsbury Centre for	The average cost to employers of a job change (across all reasons for staff turnover), including the cost of recruiting, selecting and training a

		Mental Health; 2007 [14, 19] ONS CPI indices [15]	replacement worker, is estimated at £11,625. Expressed in 2018 prices.
Reduction in staff turnover	22.5%	Building the case for wellness. 2008. [16]	Analysis of 55 firms. Reductions in staff turnover rates range from about 10% to 25%. On average, the reduction in staff turnover was around 20-25%.

SENSITIVITY ANALYSIS

The model includes one-way sensitivity analyses of all key parameters. In addition, four-way sensitivity analysis is also included. An explanation of how to interpret four-way sensitivity analysis is given in Figure A.4.

Figure A.4: Example of four-way sensitivity analysis



A ‘slider chart’ in which the model user can change each parameter of the model individually and observe the impact that this has on the results is included in the model to allow stakeholders to easily see the impact of changing specific parameters on the results. Figure **A.5** shows the layout of the slider chart.

Figure A.5: Example of ‘slider chart’