Interpretation exercise

St. Anybody's NHS Trust has exceeded their stated national limit for hospital acquired *Clostridium Difficile (C.Diff)* cases. You, as a commissioner of the trust, have to hand three key pieces of evidence available from knowledge and information colleagues, that can help you decide whether or not to apply a contractual penalty to the trust. These are:

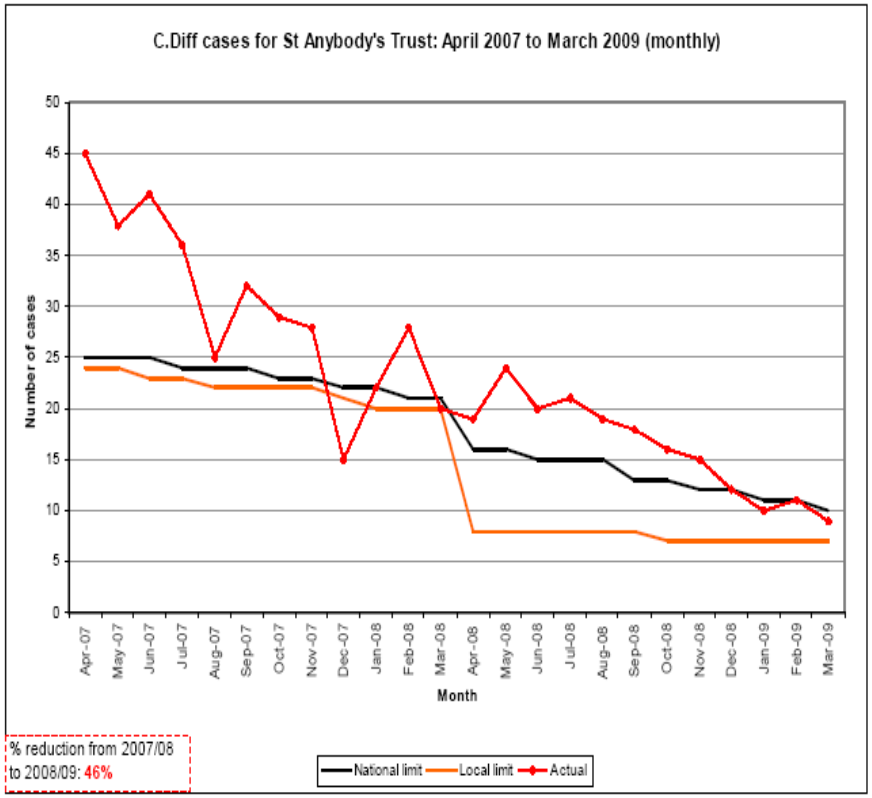
Exhibit A: Performance information covering 2 years of monthly counts of hospital acquired *C.Diff* cases alongside cumulative figures for each year. This shows that the trust has had a continuous downward trend in cases, despite being above their national trajectory.

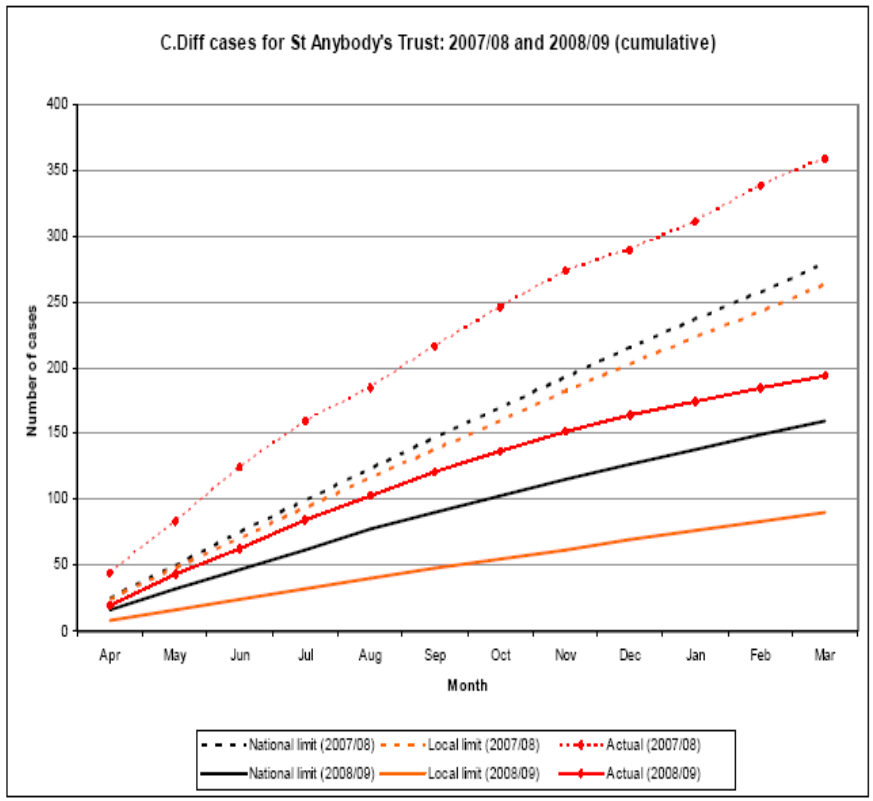
Exhibit B: Extracts from an article written in a well known medical journal suggesting that the method of calculating the penalties is unfair and doesn't allow for natural variation.

Exhibit C: An extract from the national contract for NHS Trusts. This suggests a rather unequivocal approach to applying graded penalities.

You have 10-15 minutes to review the evidence presented; you might like to consider which pieces are most compelling and how they complement each other. You then have around 5 minutes to decide, either alone or with colleagues, what your approach to this scenario would be. Do you think that penalties should be applied? If so, how much do you think is reasonable? If not, why not?

Exhibit A: C.Diff performance data April 2007 – March 2009





% distance from national limit 2007/08: 29%
% distance from national limit 2008/09: 22%

Exhibit B: Extract from Walker et al. (2008), *BMJ*, 337, 1385-1387

Fairness of financial penalties to improve control of *Clostridium difficile*

Trusts in England have been given targets to reduce *C difficile* infection rates. But **Sarah Walker and colleagues** argue that the way they are calculated makes financial penalties almost impossible to avoid

Financial incentives are increasingly being used to promote delivery of efficient, high quality health care.[1-3] However, it is widely agreed that such incentives have to be carefully constructed, with clear and simple links between behaviours or outcomes and incentives, direct indicators that validly measure the desired behaviours or outcomes, and sufficient stability to give surety to hospitals that effort (time, money) put into achieving targets is warranted.[1 3] We examine how well these criteria are met by the financial penalties introduced for failing to reduce hospital acquired *Clostridium difficile* infection as part of the 2008-9 standard National Health Service contract for acute services.

What are the targets and financial penalties?

In response to a new hypervirulent strain of *C difficile* causing large hospital outbreaks since 2003,[4 5] the Department of Health recently set a target of a 30% reduction in *C difficile* infections in patients aged 2 years or older across the entire health economy (within and outside acute NHS trusts) from 2007-8 to 2010-11.[6] All financial penalties relating to this target are based on comparing the number of cases observed in the current "contract year" to the number of cases observed in the previous "baseline" financial year. If 200 or more cases are observed in the baseline or contract year, the penalty is based on failing to meet the target reduction in the contract year (0.2% of total contract year revenue for every percentage point the target is underachieved, capped at 2% when target underachieved by 10%). However, if fewer than 200 cases are observed in the baseline and contract year, the penalty is based on exceeding the number of baseline cases (0.1% for every percentage point increase or 0.05% if baseline is below 50 cases, capped at 2% when there has been a 20% or 40% increase over baseline respectively).

Targets will be set by primary care trusts, which commission services from hospital trusts. Assuming, for simplicity, that the average target reduction is 10% a year, the financial penalties follow the trajectories in fig 1. Although the penalty is capped at 2% of income, the amounts of money are not trivial. A large trust would have a contract revenue of around £500m (€600m; $750m), and thus a 2% penalty would be £10m and even 0.1% would be £500000, the equivalent of 10 mid-grade nurses.

The specified financial penalties have extreme discontinuities. For example, a trust with 199 baseline cases will escape financial penalty if it has 199 cases or fewer in the contract year since in this situation

the penalty is based on percentage excess over baseline (0%). If, however, it has 200 cases, the penalty instead becomes based on underachieving the 10% target reduction, and immediately increases to 2% because the target has been missed by more than 10%. Thus a single extra case could cost the trust millions of pounds. The consequences of very small increases in the number of cases, entirely explainable by chance, could be particularly severe for both South Devon Healthcare and York Hospitals which had 198 cases in the first baseline year 2007-8,[7] and another six trusts with 192-195 baseline cases.

Calculating likely financial penalties

Suppose that a trust strengthens or introduces practices believed to improve *C difficile* control, such as enhanced cleaning with 10% sodium hypochlorite, use of barrier precautions, thorough handwashing with chlorhexidine or soap and water, and changes in antibiotic policies.[8-11] The expected financial penalty will depend on three factors:

- The true reduction in *C difficile* risk from these measures, where risk can be thought of as the true underlying rate
- How closely the observed reduction in cases matches this true underlying risk reduction
- The formula for calculating financial penalty.

The key point is that *C difficile* infection is not under a hospital's complete control. *C difficile* infection occurs relatively rarely (around 2-3 cases/1000 days among hospital patients aged over 65[7]) but has very many opportunities to happen. Therefore the number of cases observed is subject to considerable natural random variation; if the true risk reduction is 10%, the observed reduction is equally likely to be above or below that figure (fig 2).

Exhibit C: Extract from National Contract on C.Diff penalties

1. **Financial adjustments for performance in reducing Clostridium difficile**

1.1 At the end of each Contract Year, the Co-ordinating Commissioner may make financial adjustments in accordance with this paragraph 9 based on the Provider's performance in relation to the reduction of cases of Clostridium difficile.

1.2 In this paragraph 9:

1.2.1 the "**Baseline Year**" means the year ending on 31 March which precedes the start of the applicable Contract Year; and

1.2.2 "**Total Contract Year Revenue**" means the Provider's total revenue in the applicable Contract Year derived from the provision of Services under this Agreement.

1.3 Where:

1.3.1 in the applicable Baseline Year there have occurred at the Provider's Premises specified in Schedule 19 (*Location of Provider's Premises*) 200 or more cases of Clostridium difficile; and

1.3.2 in the applicable Contract Year the Provider fails to achieve its applicable target set by the Secretary of State for cases of Clostridium difficile by 1% or more

then at the end of such Contract Year the Total Contract Year Revenue will be adjusted by a deduction of 0.2% for each 1% by which the Provider has underachieved its Clostridium difficile target applicable in such Contract Year, as follows:

Percentage by which Provider underachieves its Contract Year Clostridium difficile target	**Percentage deduction in Total Contract Year Revenue**
Up to 1%	0%
1% to 2%	0.2%
2%to 3%	0.4%
3% to 4%	0.6%
4% to 5%	0.8%
5% to 6%	1%
6% to 7%	1.2%
7% to 8%	1.4%
8% to 9%	1.6%
9% to 10%	1.8%
10% or more	2%

and for the avoidance of doubt the adjustment will be capped at a maximum of 2% of the Total Contract Year Revenue.