

*Two Hospitals Improve Cleaning Scores and Experience Lower Infection Rates  
Five Year Case Study of Hygiena SystemSURE Plus ATP Cleaning Verification*

### Overview

In 2008, North Tees (470 beds) and Hartlepool (220 beds) Hospitals were early adopters of ATP monitoring systems in the healthcare field. Though ATP systems have been prevalent in the food manufacturing industry for decades, the benefits of using an ATP system for the detection of contamination in healthcare environments was just becoming common in 2008. With more than five years of regular monitoring and reporting history, North Tees and Hartlepool Hospitals have found major benefits from the implementation of Hygiena ATP monitoring, including improved cleanliness and lower infection rates. This case study will present the data collected in a five year study at these pioneer hospitals and provide an example of the benefits to be gained by adopting an ATP cleaning verification system in a hospital.

### Implementation

North Tees and Hartlepool Hospitals implemented ATP monitoring using the Hygiena SystemSURE Plus luminometer and UltraSnap ATP swabs. Testing is routinely used throughout both hospitals for:

- Monitoring of cleanliness
  - Patient room monitoring after terminal cleaning
- Training of cleaning staff
  - Protocol and process training of environmental services staff
  - Hand hygiene training to demonstrate effective hand-washing techniques
- Performance management
  - ATP monitoring results are used as proof of cleaning staff performance

*"What we really like about the system is that it gives us instant results on the effectiveness of our cleaning."*

*-Kevin Oxley, Dir. of Operations  
North Tees Hartlepool Trust*

To oversee monitoring in the facilities, a project champion was assigned to each facility. This "Monitoring Officer" is independent from nursing and environmental services staff and reports to department managers if corrective action is required (i.e. poor cleaning is discovered).

*"If we find a problem, if we haven't met the standard we set ourselves, we can rectify this immediately."*

*- Kevin Oxley, Dir. of Operations  
North Tees Hartlepool Trust*

On a monthly basis, reports are produced and circulated in a cross-functional team meeting of nursing, facilities, and infection control staff. This meeting opens up discussion on all cleaning and maintenance related issues, as well as suggestions for improvement.

## Results

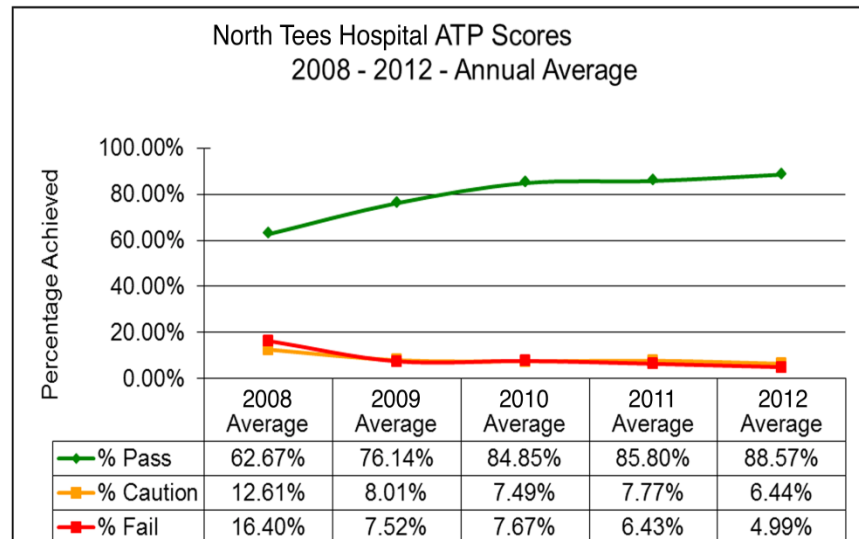
To demonstrate cleaning improvement over the five years of data, the percentages of Pass, Caution, and Fail cleaning scores for each year are presented below. North Tees and Hartlepool Hospitals rated cleaning scores according to the following RLU (Relative Light Unit) limits:

Pass	Caution	Fail
<100	101-199	200+

The graphs below illustrate how the frequency of Pass cleaning scores has increased and Fail scores decreased since the introduction of ATP monitoring in 2008.

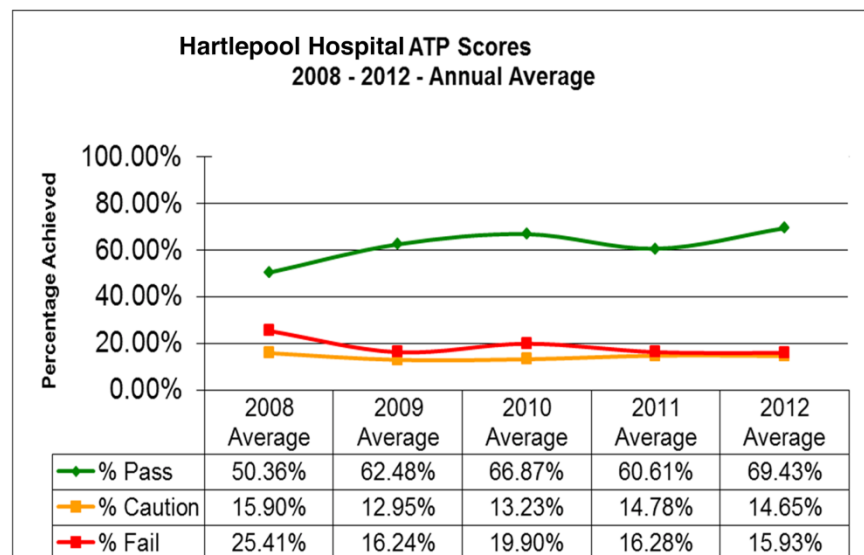
### North Tees Hospital (470 bed facility)

The data shows more than 20% improvement in Pass scores and also a reduction in Fail scores to fewer than 5%, reflecting a marked improvement in cleaning efficacy.



### Hartlepool Hospital (220 bed facility)

In the first year of testing, Hartlepool Hospital struggled with only 50.36% Pass scores and 25.4% cleaning failures. By 2012, Hartlepool's Pass scores improved by 19%, with 69.43% Pass scores. Fail scores decreased 9.48% in the same period.



Additional Improvements

During the same years as the implementation of ATP monitoring, North Tees and Hartlepool Hospitals implemented additional measures to improve cleaning.

In addition to ATP monitoring, the hospitals introduced:

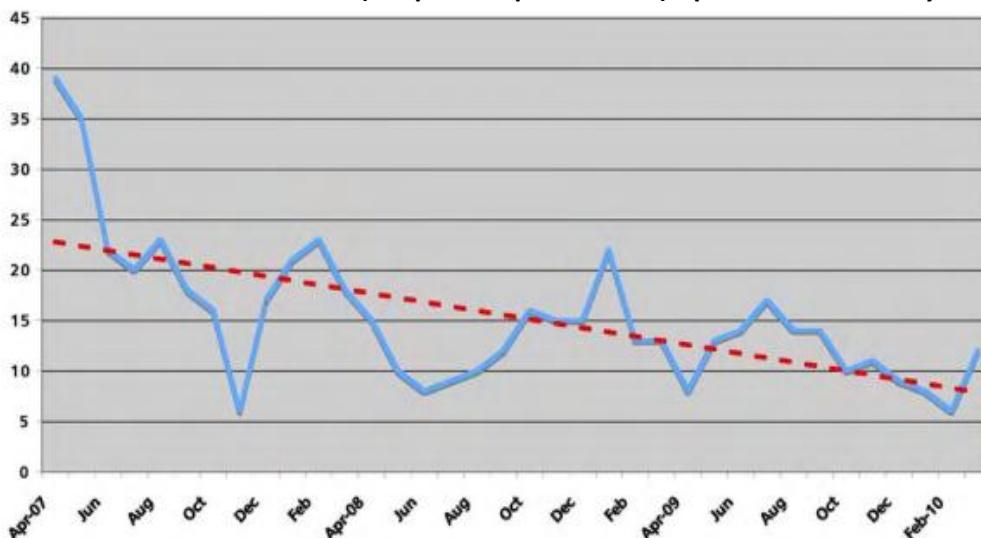
- Deep cleaning protocols, including dedicated deep cleaning teams
- Utilization of dedicated decant facilities
- Routine isolation cleans
- Fogging after routine cleaning
- Color coding system
- A dedicated hygienist staff member
- Hand hygiene training and compliance monitoring

Congregate data from the two hospitals reported 210 cases of hospital acquired C. difficile infections from April 2007- March 2008. After ATP monitoring and other interventions listed above were implemented, these cases were reported with less frequency in subsequent years. From 2008-2009, 158 C. difficile infections were reported. From 2009-2010, even fewer, 136 infections were reported.

Year	2007-2008	2008-2009	2010-2011
No. of post-48 hr C. difficile cases reported	210	158	136
<i>35.24% reduction in C. difficile cases reported</i>			
No. of infection per 10,000 occupied bed days	9.934	6.634	6.054
<i>39.06% reduction of infections per 10,000 occupied bed days</i>			

The graph below shows the monthly reports of C. difficile infections and the decline over three years of data (April 2007- February 2010).

**Clostridium difficile diarrhea (Hospital Acquired Cases) April 2007 – February 2010**



### Conclusions

The data from the five year study at North Tees and Hartlepool Hospitals clearly illustrate the benefits of Hygiena's ATP cleaning verification system, including:

- Drastically improved hospital cleanliness
- Reduced hospital acquired infections
- Optimized cleaning personnel training
- Objective cleaning staff performance management

North Tees and Hartlepool Hospitals differ greatly in size (470 and 220 beds respectively), but both experienced a 20% improvement in cleaning Pass scores with the implementation of Hygiena ATP cleaning verification. The hospitals also shared a 35.24% reduction in post-48 hour C. difficile cases and a 39.06% reduction in infections per 10,000 occupied bed days.

As of February 2013, Hygiena's ATP system continues to be an integral part of North Tees and Hartlepool Hospitals' cleaning verification programs. In addition to outstanding internal improvements, North Tees and Hartlepool's experiences have influenced the adoption of Hygiena's ATP cleaning verification system by Health Facilities Scotland (HFS), a guiding body of technical standards for all healthcare facilities in Scotland.

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