

Evaluating TECcare Control

Leasebrook Surgery, Lees, Oldham



Background

Environmental surfaces play an important role in microbial transmission across a range of clinical settings 1, 2 and it is accepted that cleaner clinical environments reduce the risk of infection.^{3,4}

Whilst 'hospital acquired' infections and outbreaks often make frequent media headlines the community or primary care settings such as GP surgeries, nursing and residential homes also pose a very real infection risk to healthcare workers, patients and visitors. Therefore, effective cleaning and disinfection of these primary care settings reduces the risk of infection or transmission posed by these facilities.

Aim

The aim of this work was to benchmark the level of soiling/organic matter at multiple locations within a GP surgery and a residential care home and to compare the level of soiling at these locations before and after cleaning and disinfection with **TECcare Control**.



Methods and Measurement

Adenosine Tri-Phosphate (ATP) swab testing was performed at each test location and provides an objective measure of cleanliness.

ATP swab test locations were chosen to represent variations in frequency of human contact, frequency of intensive cleaning and relevance to the healthcare process (i.e. the blood pressure gauge representing a frequently used, healthcare-related location; children's toy bricks representing a less frequently used, non-healthcare related location).

In each test location ATP swab tests were taken for several weeks before the application of **TECcare Control**. This provided a background ATP reading which could be used as a 'benchmark' against which the impact of **TECcare Control** could be measured.

Each ATP test was taken over an area of 100cm² and swabs were taken using an Ultrasnap swab which was immediately inserted into the bioluminescence measurement device. All swabbing was performed at the end of the working day, same day of the week, before the daily cleaning process.

No alterations were made in the standard cleaning processes in the buildings. Standard cleaning consisted of a two-stage process involving stage 1, a wipe over with neutral detergent, followed by stage 2, a wipe over with a sodium hypochlorite solution. In week four, cleaning at the test sites was performed using **TECcare Control** ready for use spray in place of the standard cleaning process, and ATP swabs were taken 20 minutes after application of the **TECcare Control** products. In subsequent weeks the normal cleaning regime was resumed, and routine samples were taken from the same location, at the same time of day and day of the week.

CASE STUDY

In the GP surgery the evaluation took place over an 8-week period with **TECcare Control** being used only once at the beginning of week 4. In the care home the evaluation took place over a 14-week period with **TECcare Control** being used at week 4 and week 8.

ATP bioluminescence uses Relative Light Units (RLU) to quantify the level of soiling/organic matter present on a surface. In broad terms, lower ATP scores equate to a cleaner surface with less organic matter/soiling.

The following RLU levels were used to interpret the swab test results:

| | |
|---------------------|--|
| 0-150 | Acceptable autoclaved levels for surgical instruments |
| 151-300 | Acceptable in intensive or deep cleaning procedures |
| 301-500 | Acceptable level for food surface production locations and equipment |
| 501-1000 | Clean domestic surfaces |
| 1,001-10,000 | Infrequently cleaned and unsafe surfaces |
| 10,001+ | Highly contaminated |

In addition to extensive ATP swab testing, several test locations at the GP surgery also had Total Viable Count (TVC) of microbes reported both pre and post cleaning with **TECcare**. TVC determination on surfaces using dip-slides is an established method used to quantify the number of microbes (bioburden) present on surfaces.

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Evidence of Improvement

ATP swab test results for the GP surgery are reported below in Table 1 with additional data relating to Total Viable Count of microbes reported in Table 2. ATP swab test results for the Residential Care Home are reported in Table 3.

Table 1. GP Surgery ATP swab test results in RLU below:

| Test Location | Pre Treatment | Post Treatment |
|----------------------------------|---------------|----------------|
| Table | 19,800 | 22 |
| Stainless steel instrument table | 498 | 44 |
| Cupboard handles | 2,848 | 73 |
| Work surface | 1,874 | 13 |
| Treatment couch | 4,919 | 82 |
| Light switch | 15,321 | 18 |
| Computer keyboard | 10,028 | 169 |
| Crèche seating | 7,769 | 36 |
| Reception desk | 8,712 | 147 |
| Wall adjacent to crèche | 15,997 | 7 |
| Desk | 3,562 | 38 |
| Blood pressure gauge | 1,845 | 26 |

Table 2. Total Viable Count of dip-slide test results in colony forming units below:

| Test Location | Pre Treatment | Post Treatment |
|-----------------|-----------------|----------------|
| Fridge base | 10 ⁵ | 0 |
| Trolley | 10 ⁴ | 0 |
| Room surface | 10 ³ | 0 |
| Peak flow meter | 10 ² | 0 |
| Floor | 10 ³ | 0 |
| Kitchen table | 10 ⁶ | 0 |

Table 3. Residential care home ATP swab test results below:

| Test Location | Pre Treatment | Post Treatment |
|---------------|---------------|----------------|
| Dining room | 33,972 | 441 |
| Lounge | 5,264 | 513 |

Discussion

The results reported in Tables 1 and 3 demonstrate, without exception, that all locations cleaned and disinfected with **TECcare Control** reported significant reductions in RLU scores compared to previous ATP swab test results where **TECcare Control** had not been used.

In the GP surgery all swab test locations reported a minimum 89% improvement in RLU levels with ten of the twelve surfaces being swabbed reporting a >97% reduction in ATP levels. In the residential care home, each time **TECcare Control** was used the ATP levels reported at these test locations dropped by over 80%.

Lower ATP levels (denoted by the reduction in RLU being reported) equate to cleaner clinical environments. This is supported by the data in Table 2 which used dip slides to quantify bioburden at multiple locations before and after cleaning with **TECcare Control**. It is evident from the data presented in Table 2 that the bioburden was reduced to zero after cleaning with **TECcare Control**. Since it is accepted that cleaner clinical environments reduce the risk of infection^{3,4} it is logical to propose that in this evaluation the application and use of **TECcare Control** has reduced the risk of infection and/or transmission associated with the GP and care home by creating and maintaining cleaner environments within these settings.

In both the GP surgery and the residential care home the surfaces cleaned with **TECcare Control** remained cleaner for longer, i.e. post **TECcare** ATP levels remained below pre-treatment levels several weeks after the initial application of **TECcare**. The reason for this ongoing reduction in ATP levels several weeks after application is a combination of the surface conditioning offered by **TECcare** and the persistent nature of its antimicrobial properties.

Conclusion

Based on the data presented in this evaluation the single step cleaning process using **TECcare Control** in two primary care settings can create and maintain cleaner clinical environments when compared to a standard two-step cleaning regime using neutral detergent followed by sodium hypochlorite. With environmental surfaces playing an important role in microbial transmission across a range of clinical settings^{1,2} the cleaner the surface the lower the risk of infection/cross infection to healthcare providers or users.

CASE STUDY



References

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