



Your **in**house Laundry Partner

**NHS Grampian
Woodend Hospital, Aberdeen Scotland**

Laundry Trial with OTEX

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1. Introduction.

JLA's OTEX ozone disinfection system was introduced in September 2006 at the Woodend Hospital, Aberdeen. The system encompassing a 23kilo washer with a single OTEX system was set up to process foul and infected personal clothing from Woodend hospital and surrounding community hospital sites within a 70 mile radius. Current laundering practices at Woodend utilise a chemical disinfection wash cycle at 40°C with sodium hypochlorite at a dosage rate of 150ppm. In addition alkali laundry detergent and powder are also dosed. Poor wash quality and bacteriological results had necessitated an additional rewash, sometimes with a second hypochlorite wash.

The project provided a direct comparison of the bactericidal performance of OTEX against the chemical disinfection wash cycle currently used at Woodend. The OTEX system utilises the second most powerful disinfectant known, ozone, which is produced throughout the wash process providing full bacteriological protection. This allows laundry to be processed at lower temperatures resulting in benefits to both utility and linen life. This document reports the results of the OTEX trial and independent analysis carried out by accredited microbiologists.

2. Site Details

2.1 Equipment

A JLA HF234 washer was installed within the laundry. This has been fitted with a single OTEX unit. It is currently fitted to the cold water and steam supply. A proprietary biological detergent was employed with the OTEX system dosing at 10mls/kilo. In comparison the existing foul wash program uses a highly alkaline powder Silex Universal Gran in combination with an alkaline booster, Biosolve and sodium hypochlorite for disinfection purposes. The site has issues with malodours, bleaching and stain removal with the current system.

2.2 Water Quality

The cold water supply was tested on site for water hardness and found to be 80ppm CaCO₃. This is considered to be relatively soft water.

2.3 Wash Program Details

Details of the comparative wash programs ie OTEX Foul & Infected and Woodend chemical disinfection process for foul loads are given overleaf. Some monitoring/sampling of other programs in use at Woodend have been carried out for information purposes only.

Table 1: Standard Hospital Low Temperature Disinfection.

Section	Description	Time	Temperature	Dip Levels	Detergent Input
1	Sluice	3 min	Cold	Med/High	Biosolve
2	Sluice	3 min	Cold	Medium	0.4g/l alkaline detergent
3	Pre Wash	10 min	40°C	Medium	0.4g/l alkaline detergent
4	Main Wash	10 min	40°C	Medium	0.5g/l alkaline detergent
5	Rinse 1	3 min	Cold	Med/High	None
6	Rinse 2	6 min	Cold	Med/High	Sodium Hypochlorite @ 150 ppm
7	Rinse 3	3 min	Cold	Med/High	None
8	Spin – 1000rpm	5 min	----	-----	----

Table 2: OTEX Foul & Infected Wash Process

Section	Description	Time	Temperature	Dip Levels	Detergent Input	Ozone
1	Sluice (Low Level)	5 min	Cold	28cm	Non	Ozone is injected throughout the whole wash process.
2	Pre Wash	6 min	40°C	20cm	60mls	
3	Main Wash	8 min	40°C	20cm	114mls	
4	Rinse 1	5 min	Cold	24cm	Non	
5	Rinse 2	10 min	Cold	24 cm	Non	
6	Rinse 3	5 min	Cold	24 cm	Non	
7	Spin – 1000rpm	4 min	----	-----	----	

Machine type: JLA HF234 – 23 Kilo
 Single OTEX Unit delivering max 4g/hr ozone
 Woodend Laundry OTEX system set up – 9-10 leds, 5psi and 4SCFH.

3. Bacteriological Test Regime

3.1 Process Assessment

Both parties conducted dipslide testing. It is appreciated that dipslides cannot be considered as an accurate measure of the level of pathogenic bacteria as accuracy is limited due to the sample size and the method of obtaining a result. However, dipslides have a significant benefit in that they are very convenient, simple to use and provide a result within a relatively short space of time. These should however only be considered/used as a process guide,

3.2 Bacteriological Testing

Tests were carried out analysing items before and after laundering. A courier service was employed to transfer samples to an accredited laboratory for analysis for target organisms. The pathogens included the following:

Total Viable Count @ 37C (TVC)
Coliforms
E.coli
Staphylococcus aureus
Methicillin Resistant Staphylococcus aureus (MRSA)
Clostridium difficile. (C.difficile)
Pseudomonas
Streptococci
Yeasts
Moulds

Samples of the wash liquor pre/post processing were also submitted to the NHS Grampian Public Health Laboratory, Department of Microbiology for TVC analysis.

Full test results are appended to the report.

4. Observations

During the period OTEX has been in operation at Woodend, the wash quality in terms of cleanliness, smell, condition etc has been closely monitored by both the Laundry Manager and Supervisor at Aberdeen. This has also included testing on fading and bleach damage by the staff. The feedback from the site has been totally positive, staff have found the system simple to use and results have surpassed their expectations in terms of smell and cleanliness. In conversation the laundry manager has stated, "OTEX ticks all the boxes in terms of laundry quality".

Empa swatch test patches were employed to compare the standard of wash between the hospital standard foul program and OTEX, the results are given overleaf:

Table 3: Standard EMPA Test Patch % Reflectance:

Standard Hospital Low Temperature Foul Wash Process		OTEX Foul & Infected Wash Process	
Protein (50)	Vegetable Dye (48-52)	Protein (50)	Vegetable Dye (48-52)
30.7	37	49	38

Industry Standard: Laundry Technology Centre figures for hospitals given in brackets.

Following observations made during the trial it was decided to weigh the loads before and after washing. This was carried out to determine whether the use of ozone had any affect upon the efficiency of the final spin, resulting in shorter drying times. The results following the washing of nurse's uniforms are as follows:

Table 4: % Moisture Retention

Standard Hospital High Temperature Uniform Wash Process*		OTEX Foul & Infected Wash Process	
Weight Pre	15kg	Weight Pre	15 kg
Weight Post	22.9kg	Weight Post	18.6kg
% Moisture Retention	53	% Moisture Retention	24

** Details of wash program appended to the report.*

The results based on 20 processes indicate that the OTEX wash cycle is more efficient at removing residual moisture than the standard hospital program.

5. Conclusion

A trial has been carried out at Woodend investigating the effectiveness of OTEX as a disinfectant laundry system. Throughout this trial, the system has been subjected to extremely foul/soiled wash loads. Bacteriological results taken have proved the systems efficacy and observations made by the laundry manager and staff have demonstrated the ability of the system to wash fouled linen at low temperatures. With a much reduced chemical dosing requirement ie one liquid biological detergent, potential savings in terms of volume and associated site management of chemicals have been confirmed.

The trial has raised the profile of the laundry process with the infection control department and following discussions with the consultant microbiologist Dr Tom Reid a full microbiological assessment has been commissioned, the results of which are given in a separate independent report from clinical trial consultants Redsox Research.

**APPENDIX A:
TVC & MICROSEARCH
MICROBIOLOGICAL TEST
RESULTS**



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Microbiological Test Results

Grampian NHS Trust - Woodend Hospital, Aberdeen

Week 1

27th & 28th September 2006

Woodend Hospital Laundry - Total Viable Count (TVC) Log

Date	Program Details	Sample Description	TVC Before Wash Process	TVC After Wash Process
27-Sep-06	Standard Hospital P10	Uniforms	SG	<VSG
	P53	U/Wear	SG	No growth
	P31	Cotton Mop	Mod	SG
	P10	A & E Uniforms	SG	No growth
	P53	U/Wear	Mod	No growth
	P53	U/Wear	Mod	<VSG
	P10	Uniforms	VSG	No growth
	P31	M Cloth	Not Sampled	SG
	P31	M Cloth	Not Sampled	<VSG
	P12	Towel	Not Sampled	Heavy
	P12	Flannel	Not Sampled	Mod
	P20	Jumper	Not Sampled	VSG
	P12	Flannel	Not Sampled	No growth
	P12	T/Towel	Not Sampled	Mod
28-Sep-06	OTEX P1	Sock	Mod	No growth
	OTEX P1	U/Wear	VSG	No growth
	OTEX P1	U/Wear	Mod	No growth

Key VSG Very Slight Growth

SG Slight Growth

Mod Moderate Growth

Heavy Heavy Growth

< Less than

**Woodend Hospital Laundry – Target Organism Log
(Colony forming units per gram (Cfu/g))**

Sample	Lab Ref No:	Wash Process	TVC	Coliforms	E.Coli	S aureus	MRSA	C.diff	Pseudomonas	Streptococci	Yeasts	Moulds
STANDARD HOSPITAL PROGRAMS												
Towel	AB001	After P12 (50C main wash)	5.4E+01	<1	<1	<1	<1	<1	<1	<1	<1	<1
Underwear	AB003	After P53 (40C pre & 75 main wash)	9.2E+01	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dirty Cotton Mop	AB002	None	9.3E+10	4.7E+09	2.1E+08	9.1E+07	4.2E+06	2.1E+03	8.2E+09	1.2E+08	9.1E+07	4.2E+06
Cotton Mop	AB004	After P18 (65C main wash)	7.1E+03	4.0E+01	<1	9.6E+01	<1	4.1E+01	1.3E+02	2.3E+02	5.6E+01	9.2E+01
Dirty Microfibre Mop	AB006	None	7.1E+11	8.0E+09	8.2E+04	8.1E+06	4.2E+03	2.4E+02	6.0E+06	2.9E+08	3.2E+06	1.9E+05
M Mop	AB008	After P18 (65C main wash)	3.7E+03	<1	<1	<1	<1	<1	<1	1.3E+02	<1	6.7E+01
OTEX WASH CYCLES												
Dirty Sock	AB005	None	1.1E+04	1.9E+02	<1	7.1E+03	<1	<1	9.2E+00	9.0E+02	6.2E+04	4.1E+03
Sock	AB009	Post Otex P1 (40C pre & main wash)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dirty Underwear	AB007	None	9.2E+06	4.3E+06	1.9E+02	7.8E+03	4.0E+01	<1	4.9E+03	2.9E+03	4.3E+04	9.0E+01
Underwear	AB010	Post Otex P1 (40C pre & main wash)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1



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Microbiological Test Results

Grampian NHS Trust - Woodend Hospital, Aberdeen

Week 2

4th October 2006

Woodend Hospital Laundry - Total Viable Count (TVC) Log

Date	Program Details	Sample Description	TVC Before Wash Process	TVC After Wash Process
4 th October 2006	P Foul + Hypo	U/Wear	Not Sampled	<VSG
	P51	U/Wear		Mod
	P60			<VSG
	P52			<VSG
	P54			SG
	P10	Uniform	SG	No Growth
	M Mop		Heavy	<VSG
	M Mop		Heavy	SG
	M Cloth		VSG	No Growth
	M Cloth		VSG	Mod
	OTEX P1 (40C pre and main wash)	Foul Load U/Wear	Not Sampled	Mod
		Foul Load Towel	Not Sampled	No Growth
		U/Wear	Mod	SG
		Foul Load Towel	SG	<VSG
		Foul Load U/Wear	Mod	No Growth
	OTEX P2 (Cold wash)	Towel	Mod	No Growth
		<VSG	No Growth	

Key VSG Very Slight Growth

SG Slight Growth

Mod Moderate Growth

Heavy Heavy Growth

< Less than

**Woodend Hospital Laundry – Target Organism Log
(Colony forming units per gram (Cfu/g))**

Sample	Lab Ref No:	Wash Process	TVC	Coliforms	E.Coli	S aureus	MRSA	C.diff	Pseudomonas	Streptococci	Yeasts	Moulds
OTEX WASH CYCLES – P1 Foul 40C pre/main wash, P2 ambient wash												
Towel	AB011	Post OTEX P1 7 leds	2.0E+03	1.2E+03	1.4E+02	2.0E+01	<1	1.9E+02	1.7E+03	2.1E+03	4.0E+03	1.9E+02
UWear	AB015	Post OTEX P1 8 leds	4.5E+02	<1	<1	<1	<1	<1	<1	<1	<1	<1
Towel	AB016	Pre OTEX	8.3E+07	3.9E+05	6.2E+04	6.2E+07	9.2E+03	1.8E+03	3.0E+07	6.1E+07	8.2E+04	1.7E+03
UWear	AB018	Post OTEX P1 8 leds	7.1E+01	<1	<1	<1	<1	<1	<1	<1	<1	<1
Towel	AB022	Post OTEX P1 8 leds	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Towel	AB023	Pre OTEX P2 8 leds	3.7E+09	2.6E+07	9.2E+04	8.2E+07	4.6E+02	3.2E+01	6.2E+07	2.7E+05	4.5E+04	2.3E+04
Towel	AB024	Post OTEX P2 8 leds	3.9E+02	3.1E+01	1.7E+01	3.7E+01	<1	<1	<1	<1	<1	<1

Woodend Hospital Laundry – Target Organism Log
(Colony forming units per gram (Cfu/g))

Sample	Lab Ref No:	Wash Process	TVC	Coliforms	E.Coli	S aureus	MRSA	C.diff	Pseudomonas	Streptococci	Yeasts	Moulds
STANDARD HOSPITAL PROGRAMS – P16 Foul 40C + Hypo, P18 65C main wash, P10 80C pre/main wash												
UWear	AB012	Post Hospital P16Foul	3.1E+03	1.2E+03	1.4E+02	2.0E+01	<1	2.9E+02	4.2E+03	3.10E+05	5.2E+03	6.4E+02
Microfibre Cloth	AB013	Pre Hospital P18	6.0E+08	3.4E+05	6.2E+02	9.3E+04	2.2E+02	6.3E+01	3.0E+04	2.8E+05	7.0E+04	5.2E+04
Microfibre Mop	AB014	Pre Hospital P18	7.3E+12	9.2E+08	4.3E+06	8.1E+06	4.3E+04	9.3E+02	6.2E+09	8.0E+10	3.3E+07	1.2E+05
Microfibre Cloth	AB017	Post Hospital P18	4.3E+04	1.8E+03	9.5E+01	1.2E+03	3.0E+00	2.0E+00	3.4E+02	3.7E+02	6.2E+01	1.4E+01
Microfibre Cloth	AB019	Post Hospital P18	1.7E+02	1.2E+01	<1	<1	<1	5.0E+00	<1	4.9E+01	<1	<1
Microfibre Cloth	AB020	Post Hospital P18	3.2E+02	3.2E+01	<1	<1	<1	7.0E+00	<1	<1	<1	<1
Uniform	AB021	Post Hospital P10	9.7E+02	<1	<1	<1	<1	<1	<1	<1	<1	<1



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Microbiological Test Results

Grampian NHS Trust - Woodend Hospital, Aberdeen

Week 3

12th October 2006

Woodend Hospital Laundry - Total Viable Count (TVC) Log

Date	Program Details	Sample Description	TVC Before Wash Process	TVC After Wash Process	
OTEX Wash Cycles					
12 th October 2006	P1 OTEX Foul Load (On arrival)	U/Wear	Not Sampled	No Growth	
	P1 OTEX Foul Rewash	U/Wear	Mod	No Growth	
	P1 OTEX Foul Load	U/Wear	Heavy	VSG	
	P1 OTEX Foul Load	Towel	Not Sampled	No Growth	
	P1 OTEX Foul Load	N/Wear	Not Sampled	No Growth	
	P1 OTEX Foul	Kylies	VSG	No Growth	
	P1 OTEX Foul	Kylies	VSG	No Growth	
	Standard Hospital Wash Cycles				
	P65	Kylies	Not Sampled	No Growth	
	P60	Jumpers	Not Sampled	VSG	
P14	Face Cloths	Not Sampled	Mod		
	Uniforms	Not Sampled	No Growth		
P67	M Mop	Not Sampled	<VSG		
P12	N/Wear	Not Sampled	No Growth		

Key VSG Very Slight Growth

SG Slight Growth

Mod Moderate Growth

Heavy Heavy Growth

< Less than

**Woodend Hospital Laundry – Target Organism Log
(Colony forming units per gram (Cfu/g))**

Sample	Lab Ref No:	Wash Process	TVC	Coliforms	E.coli	S. Aureus	MRSA	C.diff	Pseudomonas	Streptococci	Yeasts	Moulds
STANDARD HOSPITAL PROGRAMS – P60 40C main wash , P14 65C main wash, P67 65C main wash												
M Cloth	AB025	Pre Wash	9.3E+09	8.0E+06	6.1E+07	6.6E+07	4.3E+04	7.8E+02	7.2E+07	9.1E+06	6.7E+06	7.8E+03
M Mop	AB026	Pre Wash	4.7E+12	7.1E+09	4.9E+05	8.3E+06	1.7E+03	4.3E+02	8.3E+09	9.9E+07	1.2E+05	2.1E=04
U/Wear	AB027	Post Wash P60	1.53E+03	<1	<1	<1	<1	1.2E+01	4.9E+01	7.3E+01	<1	<1
Towel	AB029	Post Wash P14	7.6E+02	3.0E+00	<1	<1	<1	<1	1.6E+01	<1	<1	4.2E+01
M Mop	AB030	Post Wash P67	3.9E+02	<1	<1	<1	<1	<1	3.0E+01	<1	<1	<1
M Mop	AB033	Post Wash P67 & T Dry	2.0E+01	<1	<1	<1	<1	<1	<1	<1	<1	<1
OTEX WASH CYCLES – P1 (Mod) Foul Loads 40C Pre & Main Wash												
U/Wear	AB028	Post Wash P1 Foul	1.2E+02	<1	<1	<1	<1	<1	<1	<1	<1	<1
U/Wear	AB031	Post Wash P1 Foul	4.4E+01	<1	<1	<1	<1	3.0E+00	<1	<1	<1	<1
N/Wear	AB032	Post Wash P1 Foul	1.7E+01	<1	<1	<1	<1	<1	<1	<1	<1	<1
U/Wear	AB034	Post Wash P1 Foul	2.3E+01	4.0E+00	<1	<1	<1	1.9E+01	<1	<1	<1	7.0E+00
U/Wear	AB035	Post Wash P1 Foul	1.5E+01	<1	<1	<1	<1	<1	<1	<1	<1	<1



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Microbiological Test Results

Grampian NHS Trust - Woodend Hospital, Aberdeen

Week 4

19th October 2006

Woodend Hospital Laundry - Total Viable Count (TVC) Log

Date	Program Details	Sample Description	TVC Before Wash Process	TVC After Wash Process
19th October 2006	OTEX Wash Cycles (9 leds,6psi,3/4cfh)			
	P1 OTEX Small Load On arrival (Ozone set at 8 leds, 6psi,3/4cfh)	N/Wear	Not Sampled	No growth
				No growth
	P1 OTEX Foul Load	N/Wear	Heavy	No growth
		U/Wear	Heavy	<VSG
	P1 OTEX Foul Load	N/Wear	Mod	No growth
		T'Shirt	Mod	No growth
	P1 OTEX Foul Load	U/Wear	Not Sampled	<VSG
		U/Wear		<VSG
	P1 OTEX Foul Load	U/Wear	SG	<VSG
		U/Wear	SG	No Growth

Key VSG Very Slight Growth

SG Slight Growth

Mod Moderate Growth

Heavy Heavy Growth

< Less than

Woodend Hospital Laundry – Target Organism Log
(Colony forming units per gram (Cfu/g))

Sample	Lab Ref No:	Wash Process	TVC	Coliforms	<i>E.coli</i>	<i>S. aureus</i>	<i>MRSA</i>	<i>C.diff</i>	<i>Pseudomonas</i>	<i>Streptococci</i>	Yeasts	Moulds
Towel	AB039	After P14 Std Hospital program	7.3E+03	<1	<1	<1	<1	<1	<1	<1	<1	<1
OTEX WASH CYCLES – P1 (Mod) Foul Loads 40C Pre & Main Wash												
U/Wear	AB037	Foul Load After P1 OTEX	4.0E+01	<1	<1	<1	<1	<1	<1	<1	<1	<1
N/Wear	AB038		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Towel	AB040		2.0E+02	<1	<1	<1	<1	<1	<1	<1	<1	<1
U/Wear	AB041		3.0E+01	<1	<1	<1	<1	<1	<1	<1	<1	<1



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Microbiological Test Results

Grampian NHS Trust - Woodend Hospital, Aberdeen

Week 5/6

31st October & 1st November 2006

Woodend Hospital Laundry - Total Viable Count (TVC) Log

Date	*Batch No:	Program Details	Sample Description	TVC Before Wash Process	TVC After Wash Process
31 October & 1 November 2006	1	P1	Personal Items	Not sampled.	
	2	P3	Wool Blankets	SG	No Growth
	3	P1	Vest	SG	No Growth
	4	P1	U/Wear	Heavy	No Growth/<VSG
	5	P1	U/Wear	Mod	No Growth
	6	P1	U/Wear	Heavy	No Growth
	7	P4	Mops	Heavy	No Growth
	8	P2	Quilt	Mod	No Growth
	9	P1	Personal Items	Not Sampled	No Growth
	10	P1	U/Wear	Not Sampled	No Growth
	11	P1	U/Wear	Not Sampled	No Growth
	12	P1	U/Wear	Not Sampled	No Growth
	13	P1	U/Wear	Mod	No Growth

Key VSG Very Slight Growth
< Less than

SG Slight Growth

Mod Moderate Growth

Heavy Heavy Growth

*Validation system activated. Batch Numbers assigned

**Woodend Hospital Laundry – Target Organism Log
(Colony forming units per gram (Cfu/g))**

Sample	Lab Ref No:	Wash Process	TVC	Coliforms	E.coli	S. aureus	MRSA	C.diff	Pseudomonas	Streptococci	Yeasts	Moulds
U/Wear	AB0 42	Pre Otex	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Flannel	AB0 43	Pre Otex	9.30E+12	9.3E+05	1.7E+04	7.20E+04	91	<1	9.2E+08	8.2E+06	4.60E+07	4.20E+03
U/Wear	AB0 44	Pre Otex	4.60E+06	2.9E+05	1.1E+03	780	3	<1	5.1E+07	1.6E+06	2100	930
U/Wear	AB0 45	Post Otex	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Flannel	AB0 47	Pre Otex	3.80E+05	3.0E+02	<1	330	2	<1	4.5E+03	1.7E+04	1800	70
Flannel	AB0 48	Post Otex	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
U/wear	AB0 49	Post Otex	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
U/wear	AB0 50	Post Otex	3	<1	<1	<1	<1	<1	<1	<1	<1	<1
U/wear	AB0 51	Post Otex	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
U/wear	AB0 52	Post Otex	7	<1	<1	<1	<1	<1	<1	<1	<1	<1
C mop	AB0 54	Post OTEX	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
U/Wear	AB0 56	Pre Otex	130	<1	<1	<1	<1	<1	<1	<1	12	11
U/Wear	AB0 58	Post Otex	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
U/wear	AB0 59	Pre Otex	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
U/wear	AB0 60	Pre Otex	7.40E+07	8.2E+05	1.9E+02	146	<1	<1	2.1E+06	3.8E+04	4300	220

*Woodend Hospital Laundry – Target Organism Log
(Colony forming units per gram (Cfu/g))*

<u>Sample</u>	Lab Ref No:	Wash Process	TVC	Coliforms	E.coli	S. aureus	MRSA	C.diff	Pseudomonas	Streptococci	Yeasts	Moulds
U/wear	AB0 61	Post Otex	230	<1	<1	<1	<1	<1	<1	<1	<1	<1
U/wear	AB0 62	Post Otex	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
U/wear	AB0 63	Pre Otex	5.80E+04	3.8E+02	1.2E+01	7	<1	<1	<1	<1	1.30E+06	30
U/wear	AB0 64	Post Otex	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Standard Hospital Programs												
Kylies	AB0 46	Post P65	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
C mop	AB0 53	Post P58	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
C mop	AB0 55	Post P58	230	<1	<1	18	<1	<1	<1	<1	34	19
U/wear	AB0 57	Post P16	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

**APPENDIX B:
Woodend Hospital Uniform
Program**

Standard High Temperature Uniform Wash

Section	Description	Time	Temperature	Dip Levels	Detergent Input
1	Sluice	5 min	Cold	Med/High	None
2	Pre Wash	8 min	80°C	Medium	0.6g/l alkaline detergent
3	Main Wash	10 min	80°C	Medium	0.8g/l alkaline detergent + Hydrogen Peroxide
4	Cool Down	Temperature dependent	-4°C per minute by addition of cold water	Extra High where required	
5	Rinse 1	2 min	Cold	Med/High	None
6	Rinse 2	2 min	Cold	Med/High	None
7	Rinse 3	2 min	Cold	Med/High	None
8	Spin – 1000rpm	5 min	----	-----	----

**APPENDIX C:
Grampian NHS Test Report**

