

Airborne Infection Control - a Solution

Airborne Transmission

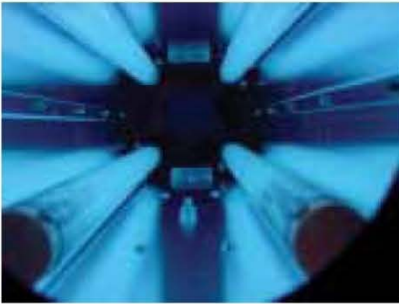
In addition to respiratory droplet secretions from pathogens, such as norovirus and influenza, airborne infection also embraces many "lighter than air" bacteria and viruses, MRSA and *C.difficile* spores, that are carried around hospital environments on minute dust particles. These organisms are widely dispersed by natural, everyday air currents before precipitating on to susceptible hosts or surfaces and equipment, from where they may be readily disturbed again. Intervening in this route of transmission will greatly improve environmental hygiene and significantly reduce the opportunity for infection.



Clinical Studies

A controlled clinical trial¹ against MRSA, was recently completed at Northwick Park NHS Trust in London. By intervening in the airborne cycle of transmission, Medixair successfully demonstrated positive and statistically significant results.

A second study² further demonstrated that airborne transmission also plays an important role in *Clostridium difficile* infection transmission. Following the placement of Medixair units within an orthopaedic trauma ward, *C.difficile* infection rates were reduced by 80%; a performance that was maintained for a fifteen month period.



The Technology

Medixair is a 110w air sterilisation unit employing ultraviolet light.

- Medixair produces 24m³ of sterilised air per hour
- Will kill 99.9999% of all viruses and bacteria
- A room 5m x 5m can be cleaned in 2 to 3 hours
- UV Energy 22,500µW.sec.cm⁻²
- In vitro testing at Microsearch UKAS Laboratories
- Silent when running < 33dB
- Full safety certification

Medixair is designed to de-contaminate the air within critical hospital environments. The machine is portable and extremely quiet when running. The patented technology packages a high amount of UV energy securely and safely into a single device that can be easily deployed within the patient environment.

Method of Use

In operation Medixair cleans hospital wards through the continuous decontamination of room air as it passes through the machine. Working at a rate of 24m³ /hour, Medixair produces a stream of sterile air which dilutes environmental contamination, keeping equipment and surfaces cleaner. In this way cross infection is reduced by lowering the risk of pathogens entering the body.

Capable of generating fast results Medixair will, unlike other decontamination methods, provide continuous and sustainable protection. It is therefore an excellent complement to combat the return of contamination after deep cleaning.

Installed as a single unit in a side ward or as multiple units in open bays, Medixair helps having an immediate and positive impact in terms of reducing rates of HCAI.

1. A New Mobile Air Sterilisation Device Prevents the Airborne Spread of Methicillin Resistant *Staphylococcus aureus* Nielsen et al |

2. *Clostridium difficile* - Aerobiology and nosocomial transmission
Dr Peder Bo Nielsen MD FRCPath MSc DLSHTM DipHIC Northwick Park Hospital Harrow Middlesex HA1 3UJ UK



Powerful ○ Quiet ○ Portable ○ Sustainable

Clinical data

MRSA Controlling Airborne Transmission¹

A controlled Clinical trial at Northwick Park NHS Significant results

- All patients who entered either the control or test room were screened for MRSA and shown to be negative for colonisation
- No colonised patients were reported throughout the trial in the test room compared with 47% in the control room
- In a cross over study Medixair reduce the environmental MRSA by 53% in the control ward
- During the trial Medixair was also seen to effectively control a Norovirus outbreak

Clostridium difficile - Aerobiology and nosocomial transmission²

From July 2007, ten ultraviolet air sterilisation units were placed in an orthopaedic trauma ward; one in each side-room and one in each bed bay.

During the study period the hospital was engaged in an active programme against CDI.

The hygiene programme for the trauma ward was not distinct in any way from practices in the rest of the hospital - apart from the installation of Medixair air sterilisation units

The data indicates that the hospital reduced the average number of CDI cases per six months from 146 (Jan 06 to Jun 07) to 98 (Jul 07 to Sep 08), a reduction of 33%.

In the same time period the trauma ward achieved an 80% reduction; from 12 cases per six months to 2.4 cases.

	2006				2007				2008		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Acute Trauma Ward	6	6	4	0	8	12	4	1	1	0	0
All Hospital Wards	76	79	84	47	62	93	64	38	44	49	50

¹ The Efficacy of a New Mobile Air Sterilisation Device on Airborne Spread of Meticillin-Resistant *Staphylococcus aureus* Peder Bo Nielsen, MD, MSc, MRCPATH, DipHIC et al
The article has completed a peer review by Journal of Hospital Infection and is pending publication
Presented at 8th Congress of the International Federation of Infection Control Budapest Hungary 2007

² *Clostridium difficile* - Aerobiology and nosocomial transmission
Peer Bo Nielsen, MD, MSc, MRCPATH, DipHIC et al
Presented at 32nd National Congress of Indian Association of Medical Microbiologist Oct 2008

Kill Energies Bacteria and Virus

UV energy at 254nm has poor propagation. To overcome this problem Medixair applies exceptional design geometry to optimise the exposure of the air, under treatment, to the germicidal properties of the ultraviolet light.

Medixair produces 22,500 $\mu\text{W.s.cm}^{-2}$ of energy; sufficient to eradicate all viruses and bacteria, including many in their spore form

Bacteria	$\mu\text{W.s.cm}^{-2}$
<i>Agrobacterium tumefaciens</i>	4,200
<i>Bacillus anthracis</i>	4,500
<i>Bacillus aegaterium (Spore)</i>	9,070
<i>Bacillus aegaterium</i>	3,750
<i>Bacillus subtilis (spore)</i>	12,000
<i>Bacillus subtilis</i>	7,100
<i>Bacillus paratyphosus</i>	3,200
<i>Bacillus enteritidis</i>	4,000
<i>Corynebacterium diphtheriae</i>	3,750
<i>Clostridium tetani</i>	4,900
<i>Clostridium botulinum</i>	12,000
<i>Dysentery bacilli</i>	2,200
<i>Eberthella typhosa</i>	2,140
<i>E. coli</i>	5,400
<i>Leptospira spp (Infectious Jaundice)</i>	3,000
<i>Legionella pneumophila</i>	2,040
<i>Legionella bozemanii</i>	1,800
<i>Legionella bumoffii</i>	3,000
<i>Legionella gormanii</i>	2,500
<i>Legionella micdadei</i>	1,500
<i>Legionella longbeachae</i>	1,500
<i>Listeria monocytogenes</i>	3,400
<i>Micrococcus candidus</i>	6,050
<i>Micrococcus sphaeroides</i>	10,000
<i>Micrococcus Radiodurans</i>	20,500
<i>Micrococcus Pittonienseis</i>	8,100



www.GlobalEdgeTech.com

For more information Please call +44 (0) 1327 810001
Email: stevejelley@globaledgetech.com for Europe, Middle East and Asia
mikedarcy@globaledgetech.com for North/South America and Caribbean
or contactus@globaledgetech.com

- RAPID REVIEW PANEL RECOMMENDATION 2; HEALTH PROTECTION AGENCY
- SMART SOLUTIONS FOR HCAI NHS; WINNER 2009
- INTERNATIONAL HCAI TECHNOLOGY INNOVATION SUMMIT & AWARDS 2009; NOMINEE 2009

Bacteria	$\mu\text{W.s.cm}^{-2}$
<i>Mycobacterium tuberculosis</i>	6,200
<i>Neisseria catarrhalis</i>	4,400
<i>Phytomonas tumefaciens</i>	4,400
<i>Proteus vulgaris</i>	3,000
<i>Pseudomonas aeruginosa</i>	5,500
<i>Pseudomonas fluorescens</i>	3,500
<i>Salmonella enteritidis</i>	7,600
<i>Salmonella paratyphi</i>	6,100
<i>Salmonella typhimurium</i>	8,000
<i>Samonella typhosa</i>	6,000
<i>Sarcina lutea</i>	19,700
<i>Serratia marcesens</i>	2,420
<i>Shigella dysenteriae</i>	4,200
<i>Shigella paradysenterea</i>	1,680
<i>Shigella flexneri</i>	1,700
<i>Shigella sonnei</i>	2,100
<i>Spiniillum rubsum</i>	4,400
<i>Staphylococcus albus</i>	1,840
<i>Staphylococcus aureus</i>	2,600
<i>Streptococcus haemolyticus(A)</i>	6,700
<i>Streptococcus haemolyticus(D)</i>	9,500
<i>Streptococcus lactis</i>	6,150
<i>Streptococcus viridans</i>	2,000
<i>Streptococcus pyrogenes</i>	2,160
<i>Streptococcus salivarius</i>	2,000
<i>Tuberculose Bacillus</i>	10,000
<i>Vibrio cholerae</i>	6,500

Virus	$\mu\text{W.s.cm}^{-2}$
Adenovirus 3	1,500
Bacteriophage (E. Coli virus)	3,000
Coxsackie virus A9	12,000
Coxsackie virus B1	15,500
Echovirus 1	11,000
Echovirus 2	12,000
Hepatitis A	11,000
Infectious hepatitis virus	8,000
Influenza	3,400
Poliovirus 1	11,000
Poliovirus 2	12,000
Poliovirus 3	10,000
Reovirus 1	15,400
Rotavirus SA11	7,800