



**Clinically proven protection
against infection**



SleepAngel products are
researched & developed
by Gabriel Scientific

About Our Company

GabrielScientific™



Gabriel Scientific is an award winning life sciences company based in Ireland. The company has addressed the significant risk posed to Safe Patient Environments through the invention of the SleepAngel™ range of barrier bedding.

SleepAngel bedding provides a clinically proven barrier to product contamination and features the patented PneumaPure™ Filter Technology which enables the product to ventilate but prevents the passage of liquid and air borne pathogens that colonise the interior of standard bedding products.

Filter Barrier Bedding

Class I Medical Device



**Reduce Infection Risks,
Improve Patient Care,
Save Your Hospital Money.**

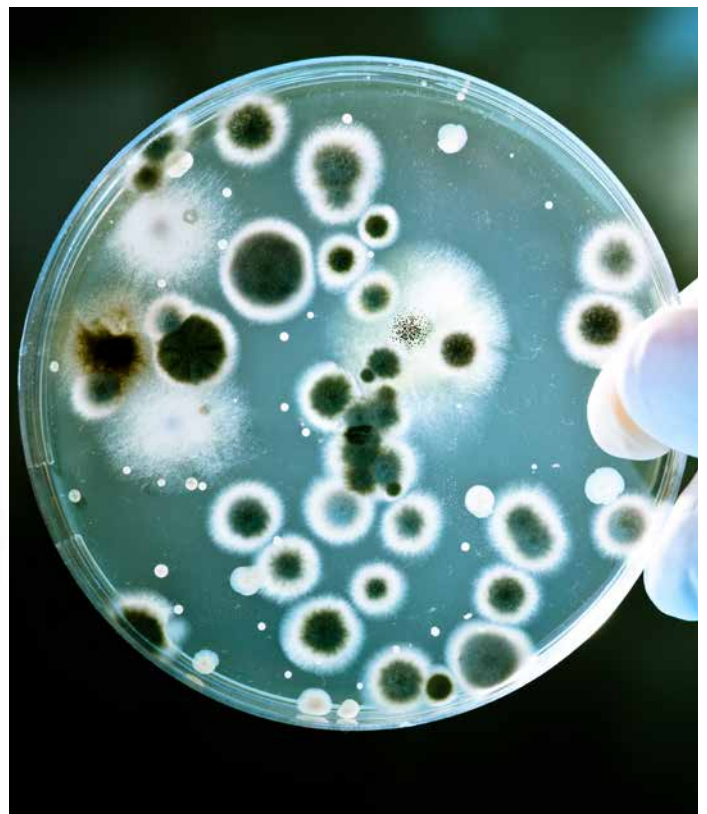
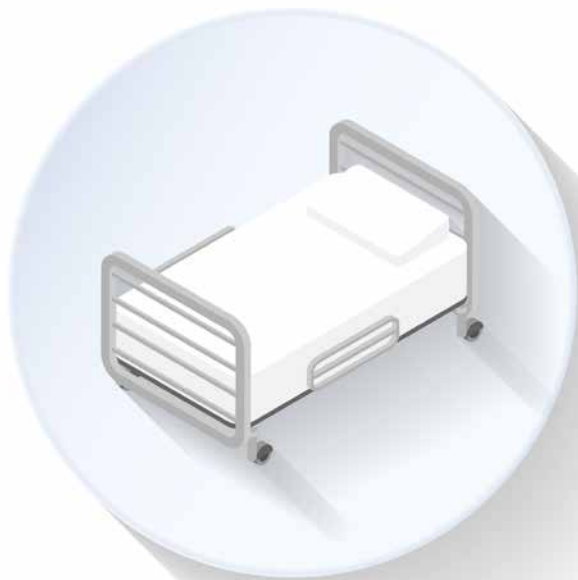
- Proven pathogen barrier
- Class I Medical Device
- Provides comfort & airflow
- Mechanically robust – does not rip or flatten easily
- Easy clean using existing hospital protocols
- Reduce laundry costs, laundry infection risks & save money over lifecycle
- Proven as part of a HAI reduction campaign - in clinical environment
- Can be cleaned in the event of heavy or blood soiling with 10,000 PPM chlorine
- Available through NHS Supply Chain

Bedding's Role in Infection Control

Patient cross-infection and HAI's in general pose a major problem for hospitals greatly increasing suffering and causing considerable expense. Bedding interiors colonised with bacteria, become a reservoir of infection, posing an increased risk of Hospital Acquired Infectionsⁱ.

The World Health Organisation, in a comprehensive study, asserts that 9% of healthcare budgets are taken up with problems related to these phenomena^{ii, iii}.

“Often only the bedrail has been sampled during investigation of outbreaks, rather than more important potential reservoirs of infection, such as mattresses and pillows, which are in direct contact with patients. It is essential that these items and other bed components are adequately decontaminated to minimise the risk of cross-infection.”^{iv}
(Creamer & Humphreys 2008)



References:

i Wilson, Jenny *Infection control in clinical practice* Balliere Tindall, London 1995

ii World Health Organization *Emerging and other Communicable Diseases*, Surveillance and Control SEA-HLM-343

iii World Health Organization *Guidelines on Prevention and Control of Hospital Associated Infections*, January 2002

iv Creamer E, Humphreys H. The contribution of beds to healthcare-associated infection: the importance of adequate decontamination *J Hosp Infect.* 2008 May;69(1):8-23.

How Does the Inner Get Contaminated?

**The pillow is a vector
for infection**



Sewn Seams

Needle perforations caused by sewing seams are over 100 times larger than harmful pathogens we want to keep out.

Vents/Zips

Vents and zipper openings cannot function and provide barrier protection at the same time. Air vents pose further risk by aerosolising and venting out the micro-organisms contaminating the inside of the pillow.

Non Barrier Covers

pillows without barrier protection properties enable the passage of germs from the interior to the immediate environment of the patient's ear, eyes, nose and mouth.

Standard hospital pillow designs are inherently flawed, enabling pathogen ingress through the cover fabric, side stitching, vents or a combination of all these entry points. In addition the movement of contaminated pillows around hospital wards and through hospital laundries is identified as a mode of spreading pathogens.

Study shows that majority of tested standard wipedown hospital pillows were contaminated.ⁱ

Risk posed by contaminated bedding is particularly acute among patients suffering asthma, allergy and respiratory conditions.

References:

ⁱ St. Bartholomew's and the London Hospitals NHS Trust, Investigator led report, 2011

Safeguarding Health Protection From Infection

Breathable mechanical filter that allows clean airflow into the pillow but blocks out pathogens and allergens.



Durable, soft touch and high performance textile that blocks out contaminants. Vapour permeable and waterproof.

Heat sealed seams provide complete barrier – no stitching holes.

SleepAngel™ barrier bedding combats product contamination risks using our patented and award winning PneumaPure™ Filter Technology, a microbiological filter that blocks pathogens while allowing the product to breathe.

SleepAngel™ products are deployed in the most advanced public and private healthcare systems in Europe and the Middle East.

SleepAngel™ CE Class I Medical Devices are long life, highly comfortable, liked by staff and compatible with existing bedding cleaning protocols.

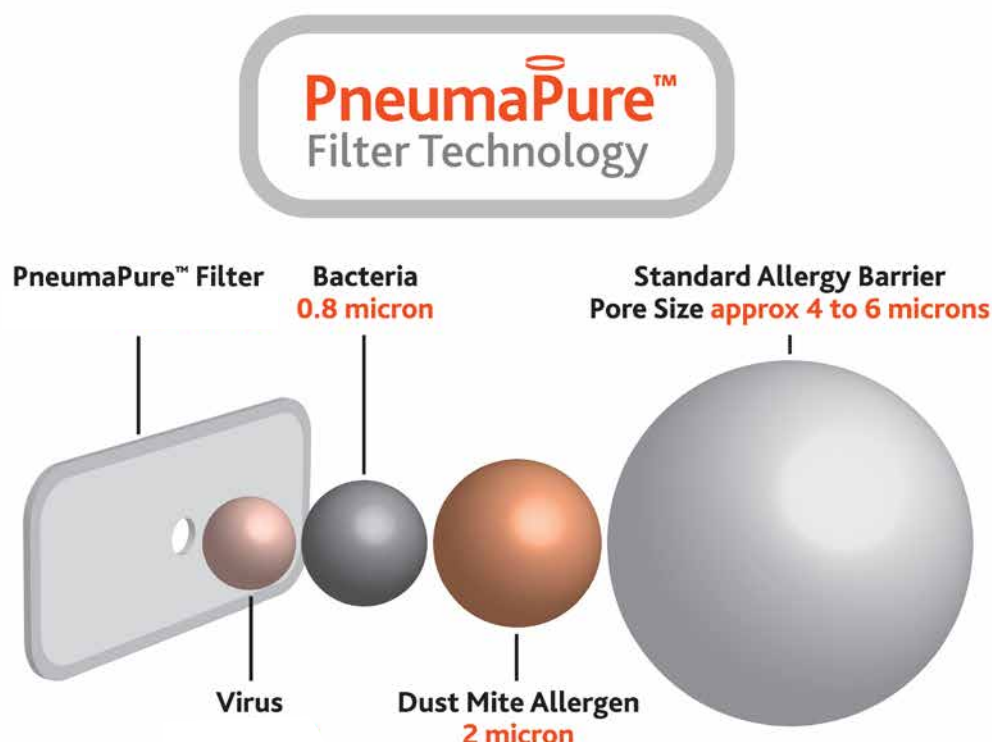
All SleepAngel™ products are easy to wipe down and clean using standard cleaning protocols and are liquid-proof and highly stain resistant. Due to its unique fully welded construction, SleepAngel™ products are extremely durable and our evidence demonstrates that using SleepAngel™ saves your hospital money.

How does PneumaPure™ Filter Technology work?

PneumaPure Technology is the intelligent application of a liquid-proof filter mechanism to a cushioning product – a pillow, duvet, mattress and cushion.

The filter is a liquid-proof nano-porous composite; it is hydrophobic and acts as a breathable barrier. The filter is uniquely strengthened and adapted to cushioning applications. In effect, the PneumaPure filter prevents the passage of liquid and air borne pathogens to the interior of the product, whilst allowing the product to breathe. (Air transport in and out of the product is essential to allow proper shaping and draping to the patient).

PneumaPure Technology is proven to be highly effective in preventing the ingress of pathogens e.g. MRSA, Norovirus, C. diff, E. coli, etc. to the interior of a bedding product.



SO SMALL "SUPER BUGS" CANNOT CONTAMINATE IT



Products

Pillows

Standard Fibre Pillow



Filling: 100% carded polyester fibre
Supportive core: 100% polyester thermobonded wadding pad
Standard size: 46x71 cm
Pillow weight: 800 g

Custom sizes and different filling weights are available upon request.

Standard Memory Foam Pillow



Filling: 100% Polyurethane memory foam
Foam density: 45kg/m³
Size: 40x65x11 cm (fits for 50x70 cm pillow cover)
Total pillow weight: 1500 g

Small Memory Foam Pillows or Positioners



Size: 30x40x8 cm
Weight: 570 g



Size: 30x30x30 cm (triangle)
Weight: 600 g



Size: 26x50x5 cm
Weight: 600 g

Filling: 100% Polyurethane memory foam
Foam density: 45 kg/m³

Custom sizes and shapes are available upon request

Duvet



Filling: Soft thermobonded polyester wadding.

Weight: 200 g/m²

Thermal resistance: 4 TOG

Standard size: 138x198 cm

Weight: 1600 g

Custom sizes are available upon request.

Fabric

For all pillows and duvets outer fabric is a multi-stretch polyurethane coated textile. Vapour permeable and waterproof.

Easy to wipe clean using approved disinfectants.

Fabric weight: 180 g/m²

Fabric: Face: 100% polyurethane Backing: 100% polyamide

Flame Safety: In compliance with British, Irish and European Standards

Standard colour range



Blue fabric
White print



Light blue fabric
White print



White fabric
Blue print



White fabric
Light grey print

SleepAngel Medical Mattress

Research and Design Process

Range designed by Dr Duncan Bain Gabriel Scientific Technical and Research Director and David Woolfson, Gabriel Scientific CEO.

Dr Bain is a Doctor of Biomedical Engineering and is widely published in the field of support surface technology. Dr. Bain is a pre-eminent expert in the field of support surface technology and he previously ran a support surface evaluation programme for the UK Medical Devices Authority and the NHS. David Woolfson is an award winning innovator in the field of material science and support surface design.

We brought these skills plus updated learnings to the design of the SleepAngel Pressure Reducing mattress range so that we can now offer the “best in class” with respect to the two key medical mattress design criteria i.e. pressure area care (Tissue Viability) and Infection Prevention and Control.

The PneumaPure filter enabled SleepAngel™ mattress covers provide the proven and most effective infection prevention barrier in the medical cushioning device market.



Infection Prevention & Control

The mattress is hermetically sealed on all its seams and the design is a proven barrier to germs and allergens getting inside, including MRSA and C. diff. The mattress ventilates through the specialist PneumaPure filter which is also a proven barrier to germs and allergens. The ventilation allows the mattress to conform for pressure distribution and to be comfortable. The interior is designed to provide conformity and pressure reduction.

Can be cleaned in the event of heavy or blood soiling with 10,000 ppm chlorine.
Premium filter-enabled and hermetic cover complete with water and air-tight zipper also available.

Pressure Area Care

Range has been tested for i) pressure distribution, ii) vapour permeability and iii) durability using the most advanced protocols and test equipment in the market.

Applying the protocols and test methods devised for the UK NHS, the SleepAngel Range scored in the highest percentile across the three parameters (data available upon request).

Foams are castle cut for enhanced pressure reduction and mattress flexibility on manual or powered adjustable beds.

Mattress flexibility along with the supple finish on the cover textile help to minimise shear forces.



Range Recommendations

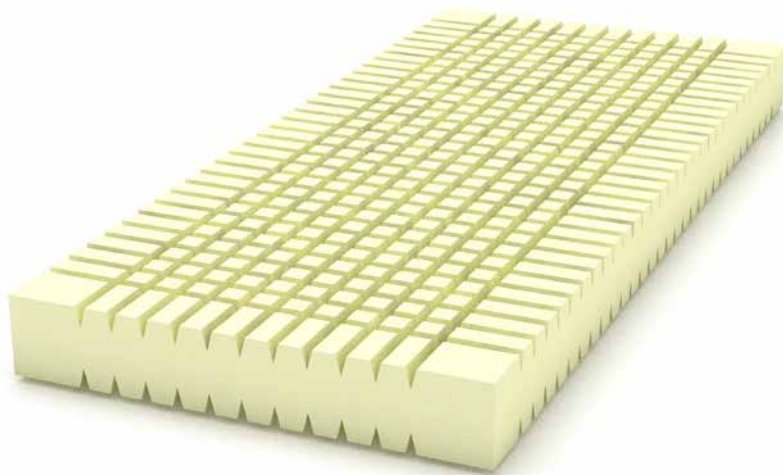
Our range is categorised to align with a clinical assessment of the risk profile of the patient with regards to developing pressure sores.

LOW-MEDIUM RISK

Castle-ated soft polyurethane foam

Density: 40 kg/m³

Fatigue class: Very Severe



MEDIUM-HIGH RISK

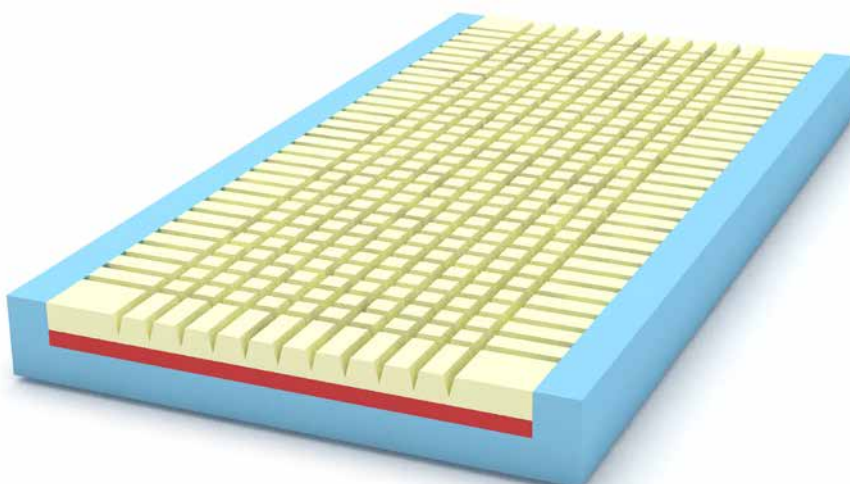
SleepAngel visco memory foam medical mattress with edge zone strengthening offers pressure relieving properties and a good edge support. Recommended for a patient with a moderate-high risk of pressure sores.

Top: Castle-ated soft memory foam. Density 60 kg/m³

Middle part: Soft polyurethane foam. Density 40 kg/m³

Side walls & base: Hard polyurethane foam. Density 40 kg/m³

Fatigue class: Very Severe



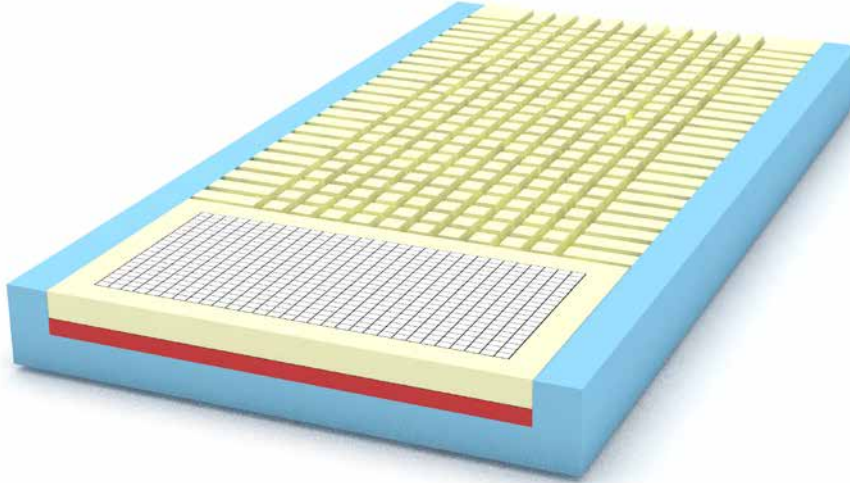
HIGH RISK - with enhanced heel relief zone

Top: Castle-ated soft memory foam. Density 60 kg/m³. With gel insert

Middle part: Soft polyurethane foam. Density 40 kg/m³

Side walls & base: Hard polyurethane foam. Density 40 kg/m³

Fatigue class: Very Severe



Standard sizes:

Length: 198cm Width: 88cm Height: 15cm

Length: 200 cm Width: 80 cm Height: 15cm

All mattresses are covered with a multi-stretch polyurethane coated textile.

Vapour permeable and waterproof.

Easy to wipe clean using approved disinfectants.

Fabric weight: 230 g/m²

Fabric: Face: 100% polyurethane Backing: 100% polyamide

Flame Safety: In compliance with British, Irish and European Standards

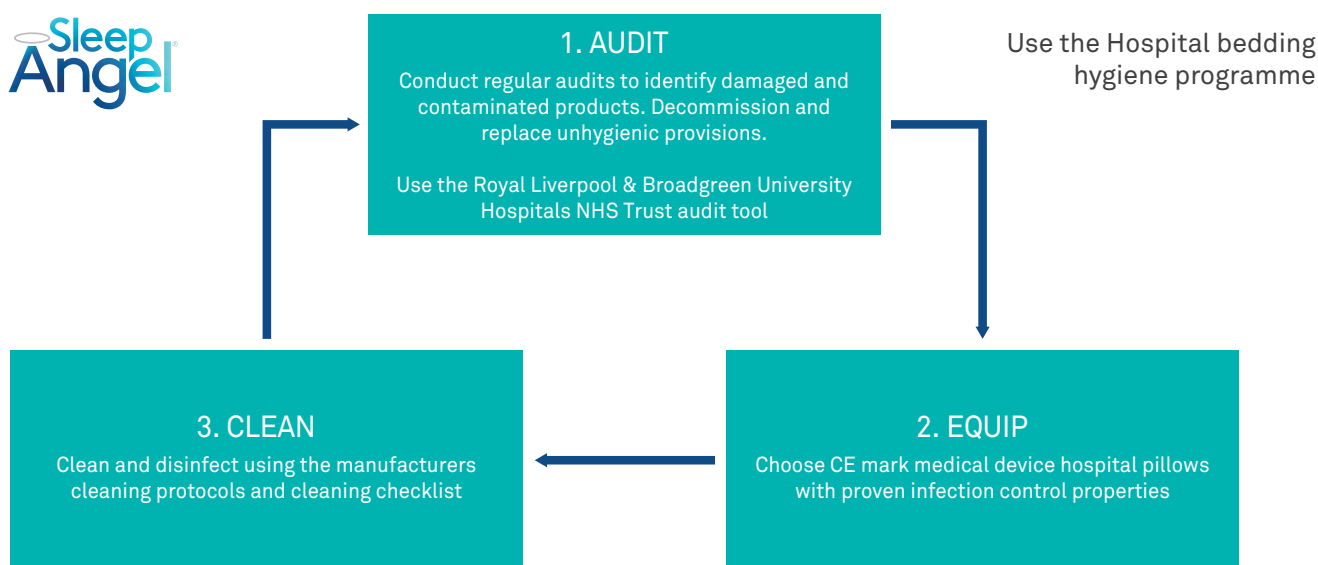
SleepAngel Bariatric range also available (ask your
SleepAngel customer advisor)

Bedding Hygiene requires a programme

Audit. Equip. Clean. Audit.

Hygiene starts first by auditing all of your bedding. Then selecting and deploying proven barrier products, compliant with medical device standards and featuring proven infection prevention properties.

Safeguard against contamination by implementing systematic cleaning and disinfection protocols. Maintain bedding equipment by auditing and removing unhygienic or compromised products through regular stock audits.



Cost Benefits

On converting the facility to SleepAngel pillows, case studies and user evidence demonstrates:

- A reduction in number of pillows per bed: SleepAngel pillows are made with a much more substantial and supportive inner than cheaper alternatives. As a consequence, patients require less pillows per bed and hospital facilities can reduce their overall inventory of pillows.
- Replacement frequency of 36 months: materials used to make the SleepAngel pillow are proven in use to be extremely durable under normal conditions of wear and tear. In addition, because no fluids or contaminants can enter the inner of the pillow, loft and bulkiness is retained thereby extending its useful life. NHS hospitals in the UK who carry out regular audits of their pillow stock have been using the SleepAngel pillow for over 36 months with no concerns as to loft, support, patient comfort or infection risk. This compares with an average replacement cycle of 6-9 months for the standard cheaper alternative.

Both of the above result in significant cost savings for hospital facilities on conversion to using the SleepAngel pillow as standard. Savings arise both in initial product cost and also in ongoing laundry and maintenance costs. This is before considering any cost savings that would arise from a reduction in the incidence of HAI's.

User Experience and Expert Reference

“Prior to intervention with SleepAngel equipment respiratory ward reported 0.52 CDI per month. Post intervention reported .12 CDI per month. No other differences (while over the period – virtually all other wards increased CDI).”

Southport & Ormskirk NHS Hospital Trusts.

Kiernan M; Beds of Roses; Maintenance of safe patient environments by nurses*; Reducing HCAI's Conference, London June 2014

Martin Kiernan, Infection Control Nurse Consultant, Chair Education Committee HIS, Former President IPS

“After implementation of our HCAI reduction strategy over a number of years, we reduced MRSA from 34 cases to 4 cases per annum and C.Diff cases from 363 to 64 cases per annum.

Our recommendation is to deploy CE marked infection control pillows such as SleepAngel and clean and audit stocks regularly”

Liverpool and Broadgreen University Hospital NHS Trust

Wake D; Reducing HCAI's Conference, London June 2013

Diane Wake , Chief Executive Officer , Barnsley NHS (previously Director of Nursing, Liverpool & Broadgreen Universities Hospitals Trust NHS Trust)

“Pillows are one of the major remaining vectors for infection because your head is one of the best ways for infection to get into your body or out of the body. Any pathogens that you are carrying, you will colonise the pillow (with these pathogens)”

Reducing HCAI Conference, 2014

Dr. Duncan Bain

Pre-eminent biomedical engineer specializing in the field of support surface technology - Senior Lecturer at the William Harvey Institute, Queen Mary College London

“The difference with SleepAngel is that it comprises an absolute barrier with a breathable component, it has a comfort layer, it actually becomes comfortable for you. The breathing of the pillow is integral to the SleepAngel product.”

Airmid Health Group, 2013.

Dr. Bruce Mitchell

Dr Mitchell is a fellow of the Royal College of Physicians in Ireland, the Royal College of Physicians in Canada and is a diplomat of the American Board of Allergy and Immunology. He is a director of the Immunology Laboratory, Blackrock Clinic and a past President of the Allergy Foundation of Ireland

SleepAngel Reference Hospitals

SleepAngel is adopted as standard in multiple, teaching hospitals, general hospitals, Trusts and specialist units across the UK NHS, Ireland, Scandinavia, Central Europe, The Middle East and beyond. Reference facilities and contacts available upon request.

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