The Silent Pandemic:

Antimicrobial Resistance and the Need for Better Hospital Design

A workshop report

Healthcare Infection Society

Supported by

Sidara

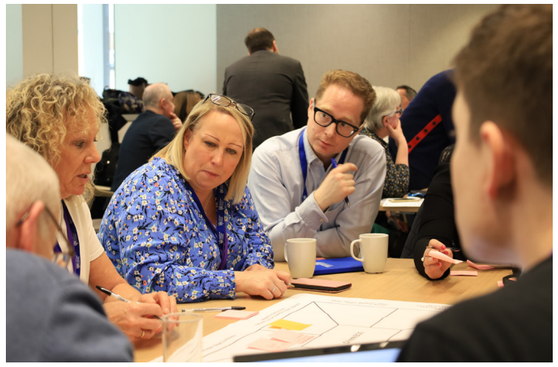
Participants

Alpa Patel	New Hospital Programme, NHS England
Andrew Thomas	The Royal Orthopaedic Hospital, Birmingham
Annette Jeanes	Infection Medical Chambers ltd
Antony Gradley	Introba
Ashley Flores	Kings College Hospital NHS Trust
Asif Din	Perkins + Will
Ben Kilbey	Inivos
Breda O Brien	UL Hospitals Group
Brid Minihan	UL Hospitals Group
Carole Fry	UKHSA
Caroline Mitchell	Healthcare Infection Society
Cheryl Callow	Frimley Health NHS Foundation Trust
Chris Roberts	David Morley Architects
Chris Settle	South Tyneside and Sunderland NHS Foundation Trust
David Enoch	UKHSA / Addenbrookes Hospital
David Jenkins	University Hospitals Of Leicester NHS Trust
Doug Baldock	New Hospital Programme, NHS England
Edith Blennerhassett	Arup
Elaine Cloutman Green	Great Ormond Street Hospital
Elisa Cecilli	Portland
Fiona Parker	Currie & Brown
Gonzalo Vargas	Perkins + Will
Graham Day	Introba
Helen Dunn	Great Ormond Street Hospital
Helen Griffin	NHS England
Helena Parsons	Sheffield NHS
James Price	Brighton and Sussex Medical School
James Soothill	Great Ormond Street Hospital
Jasmin Islam	Kings College Hospital NHS Trust/UKHSA
Jay Turner-Garder	Wirral University Teaching Hospital
Jenni Bronock	Perkins + Will
Joanna Harris	UKHSA
John Bodley-Scott	John Sisk & Son Ltd
Jonathan Baillie	Health Estates Journal
Joost Hopman	Radboud University Medical Center, Netherlands
Karen Green	Lang O Rourke
Leila Hail	UCLH NHS Foundation Trust
Lisa Kenny	Sidara
Lukas Adrian Jurk	IKE, Technical University Braunschweig, Germany
Manjula Meda	Frimley Health NHS Foundation Trust/ Healthcare Infection Society
Martin Clark	Currie & Brown
Matthew Hird	Architects for Health
Max Lishmund	Health Spaces
Mike Weinbren	New Hospitals Programme
Nathanael Moyers	Sidara
Oana Gavrilliu	Hassell
Pat Cattini	University Hospitals Sussex NHS Foundation Trust
Paul Sheldon	Currie & Brown
Peter Hoffman	Healthcare Infection Society
Peter Kelly	Pharmafilter
Rachelle McDade	Currie & Brown
Rafael Marks	Perkins + Will
Regan Cook	Hygenius
Richard Finnemore	Dar
Rowan Mason	Introba
Sarah Adibi	Healthcare Infection Society
Shanom Ali	UCLH NHS Foundation Trust
Simon Boundy	Stride Treglowen
Simon Goldenberg	Guy's & St Thomas' NHS Foundation Trust
Simon Picking	NHS England
Tom Potter	PH+S Architects
Trupti Patel	UKHSA/UCLH
Valentina Chisci	Perkins + Will
Victoria Gentry	Frimley Health NHS Foundation Trust

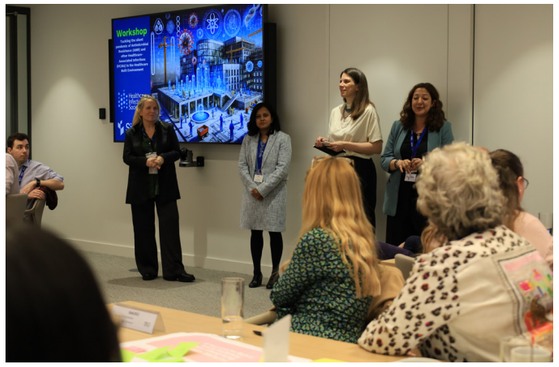
Antimicrobial resistant (AMR) healthcare-associated infections (HCAIs) are responsible for approximately 200 deaths per hour. They remain a persistent and growing threat within hospitals, exacerbated by design flaws and the poor implementation of infection prevention measures.

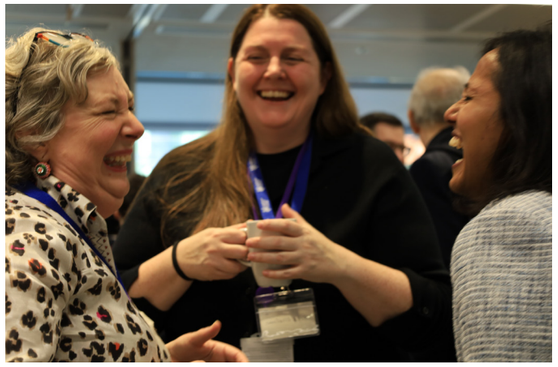
The Healthcare Infection Society (HIS), in collaboration with Sidara (a built-environment specialist), on Thursday 27 March 2025 at 150 Holborn – brought together infection prevention and control (IPC), clinicians, architects, engineers, healthcare planners and other specialists to discuss 'The Silent Pandemic' of AMR. This initiative aims to foster honest, constructive debate and drive practical solutions through shared knowledge and experience.

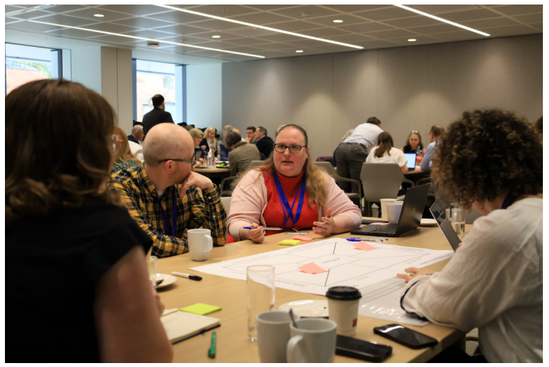
This report synthesises the key discussions and takeaways from the event, focusing on communication and stakeholders, education, and innovation in hospital design.

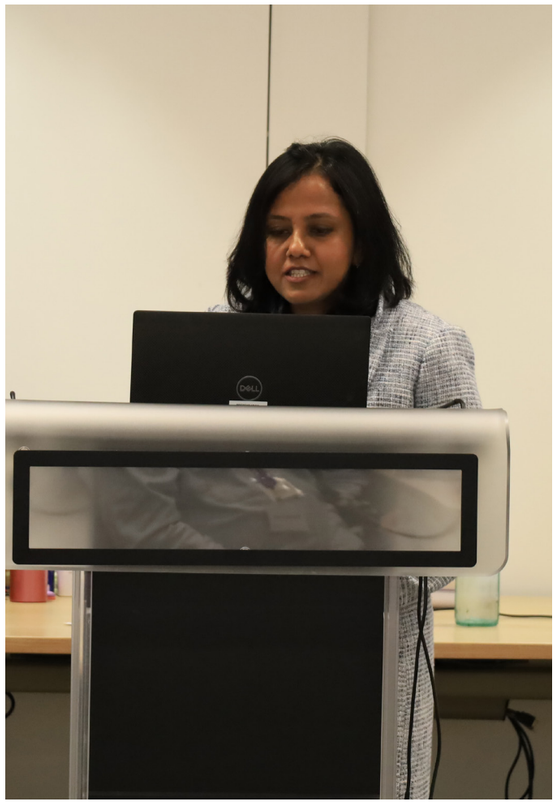


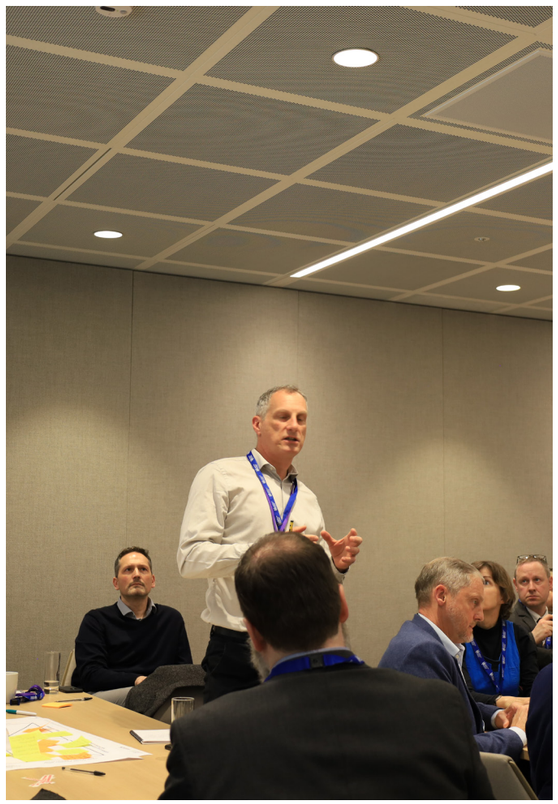

LK
Lisa Kenny (External)
1H

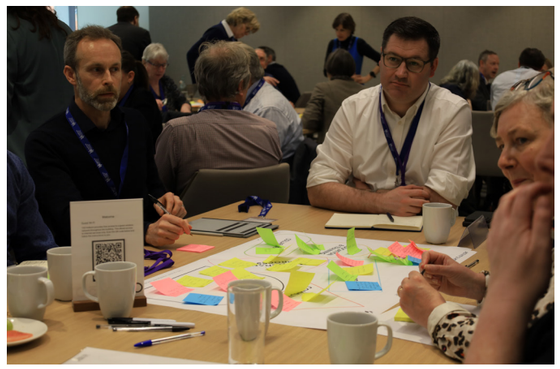

Workshop



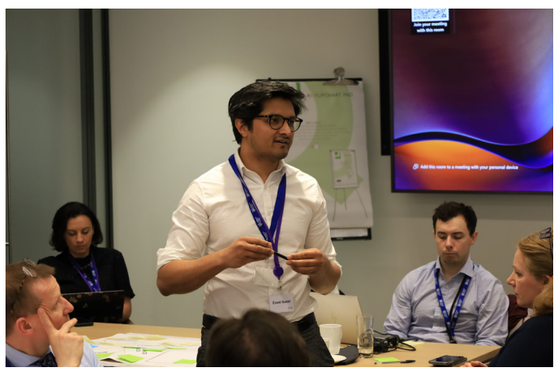









Workshop



1. Communication and Stakeholders

Bringing disciplines together

The Problem

IPC professionals are often brought into hospital design projects too late – typically after contracts are signed, designs are finalised, and construction is already underway. This results in missed opportunities to integrate infection prevention and control into fundamental design decisions.

Key Issues Identified

- Lack of early-stage collaboration between IPC teams, healthcare planners, architects, engineers and project managers.
- Poor communication between stakeholders and a lack of regrouping when cost-saving measures are implemented, designs are changed and instillation has to be adapted, leading to compromised infection prevention and control measures.
- No formal review process to capture and share lessons learned from past projects – what has worked, what has not, and which products meet real-world demands versus tick boxing on paper.

Solutions Proposed

- Embedding IPC in the Design Phase – IPC teams must be involved from the project's inception to ensure infection prevention principles are incorporated from the start.
- Cross-disciplinary Collaboration – Establishing project safety groups that include IPC professionals, healthcare planners, engineers, architects and contractors to oversee infection risk mitigation.
- Systematic Learning and Knowledge Sharing – Developing feedback loops to document and share best practices across hospital projects.
- Standardised Design Blueprints – Creating a best-practice hospital design framework that incorporates input from all stakeholders. This can be customised per project but ensures core infection prevention and control principles are maintained.
- Governance and Change Control – Any design changes during construction must be reviewed by IPC teams to prevent poor design decisions from being implemented.

2. Education

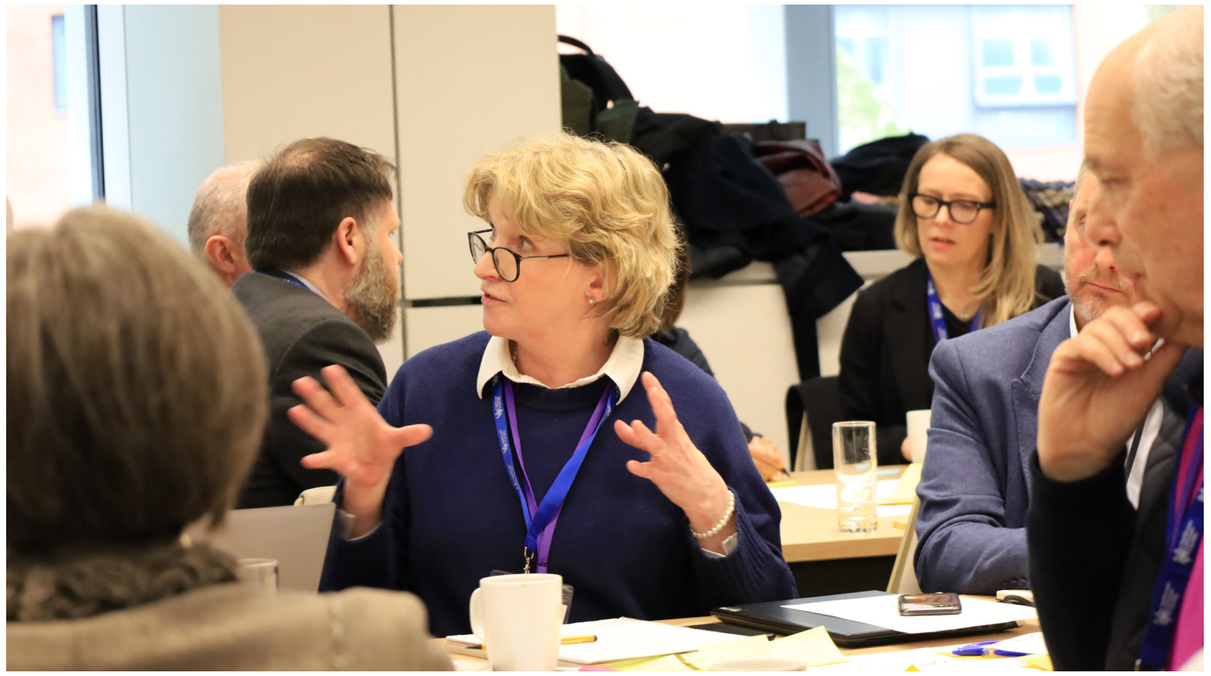
Raising Awareness and Competence at All Levels

The Problem

Different disciplines naturally work in silos, but true change requires collective action.

A key challenge discussed at the event was the misconception that infection prevention and control is solely the responsibility of IPC teams rather than a hospital-wide priority.

Additionally, many professionals involved in hospital design and construction lack formal training in infection prevention principles and thus are unaware of their role in reducing HCAIs.



Key Issues Identified

- Lack of IPC training among architects, engineers, healthcare planners and contractors.
- Over-reliance on compliance with outdated or contradictory guidelines, instead of using an evidence-based, risk-assessment approach.
- Inadequate post-construction education for hospital staff on infection prevention.
- Limited awareness of 'The Silent Pandemic' – even within hospitals, the urgency of this issue is not widely recognised.
- No structured feedback strategy – lessons learned from past projects are not shared, meaning the same mistakes are repeated in new builds.

Solutions Proposed

- Mandatory IPC Training for All Stakeholders – Architects, engineers, healthcare planners, contractors, and hospital staff should receive training on their role in infection prevention, covering everything from design to installation to workplace behaviours.
- Risk-Based Compliance Approach – Shift away from blind adherence to guidelines and instead prioritise risk assessment based on real-world experience, research, and case studies.
- Certification and Governance – Develop certifications ensuring professionals involved in hospital design and maintenance stay up to date with relevant best practices.

3. Design and Innovation

Addressing Failures and Rethinking Hospital Environments

The Problem

Hospital design frequently fails to prioritise infection prevention and control, leading to preventable outbreaks. While some design flaws are corrected over time, lessons learned are not systematically recorded or shared, allowing the same mistakes to be repeated.

Key Issues Identified

- Inadequate specifications of building material. Example, taps and pipework – leading to stagnant water and bacterial growth.
- Incorrect fitting or placement. Example, handwash basins increasing contamination risks.
- Failures to use technology that reduce physical contact with frequently-touched sites. Example, failure to use sensor-operated fixtures and automated doors – increasing contact transmission risks.
- Overlooked maintenance and monitoring – post-construction, leading to long-term infection risks.
- Net zero goals vs. clinical needs – sustainability initiatives (e.g., low-flow water systems) inadvertently create blockages and bacterial growth due to reduced flushing capacity.
- Inadequate sign-off processes – most testing focuses on visible areas, while 'invisible systems' (drainage, water, and electrics) are often ignored.

Solutions Proposed

Innovative Design Strategies, such as:

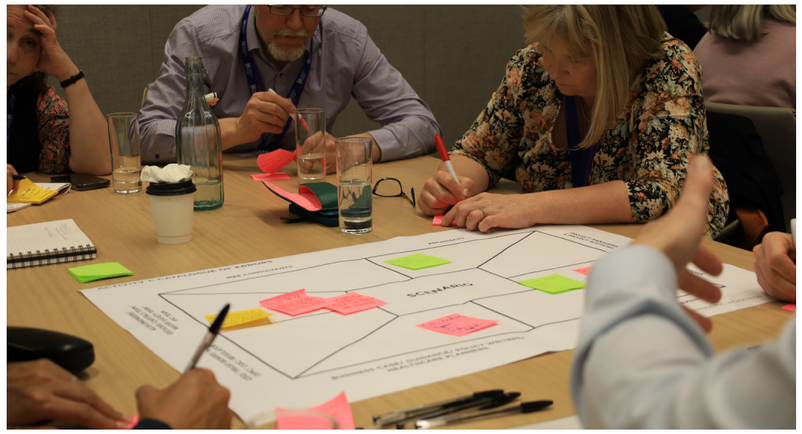
- Offset taps from drains to prevent splashback.
- Standardise tap specifications to eliminate high-risk components like flow straighteners.
- Use prefabricated plumbing components to minimise on-site contamination.
- Explore alternatives to water-based handwashing systems.
- Provide feedback to manufacturers on what does and does not work in real hospital settings.

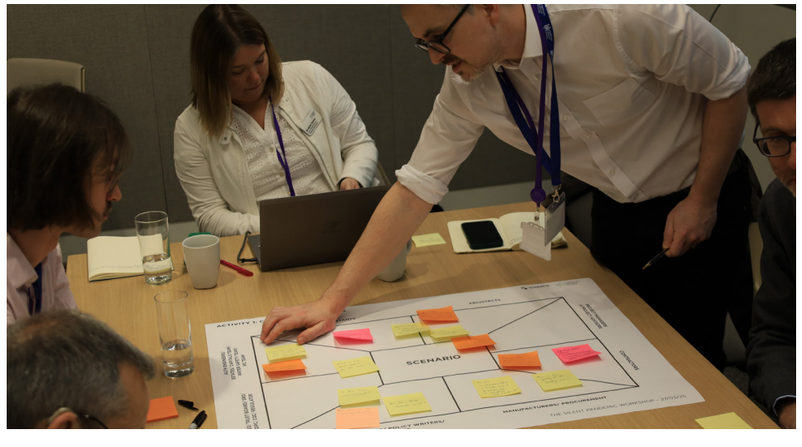
Robust Procurement and Construction Processes:

- Mandate full water safety compliance during construction.
- Specialist contractors should handle infection-sensitive installations.
- Implement systematic flushing and testing protocols before and after construction.

Leveraging AI and Internet of Things (IoT) for Smart Hospital Infrastructure:

- AI and IoT can detect drainage issues early and reduce human error.
- Integrated monitoring can automate safety checks on critical systems like water flow and air filtration.





Implementation Roadmap: What's Next?

Now (Next Week)

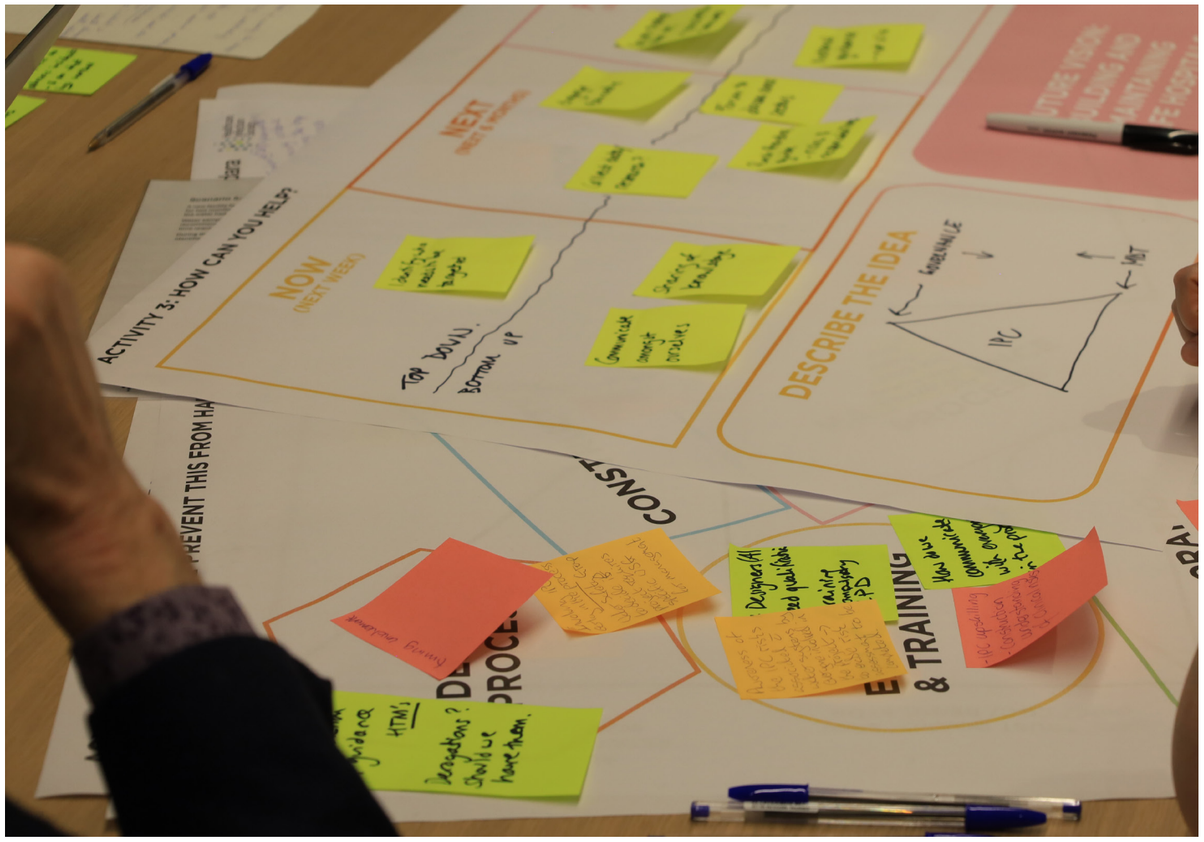
- Strengthen communication between IPC teams and design professionals.
- Begin sharing lessons learned across hospital projects.
- Increase awareness of 'The Silent Pandemic' within healthcare settings.

Next (Next Six Months)

- Create a live knowledge-sharing platform for best practices, products, and solutions.
- Ensure clinicians and infection prevention teams have a voice in hospital design decisions.
- Improve feedback mechanisms so that past mistakes are not repeated.
- Consider how the proposed solutions might be adapted for use in other healthcare environments, such as the growing number of diagnostic and community care centres.
- Advocate for mandatory reporting of AMR related deaths on death certificates.

Future (Next Year)

- Learn from global best practices in healthcare design.
- Develop standardised processes for infection prevention integration in the built environment.
- Implement governance structures that give IPC professionals real influence in construction and maintenance.
- Create a live knowledge-sharing platform for best practices, products, and solutions.
- Hold future summits to continue collaboration.
- Establish mandatory IPC training programmes and a risk-based compliance framework.



Conclusion

The silent pandemic of antimicrobial resistance demands urgent action. To combat this, we must rethink hospital design, prioritise education, and embrace innovation. By fostering early collaboration, implementing effective training, and adopting evidence-based solutions, we can create safer environments for patients and healthcare workers.

The findings from this event highlight that patient safety must be at the heart of all hospital infrastructure decisions – not an afterthought.

The challenge is clear.
The time to act is now...

Announcing the Built Environment Infection Prevention Initiative (BEIPI)

The workshop demonstrated the significant interest and commitment across both the built environment industry and IPC sector to contribute time and expertise to develop solutions in infection prevention within the hospital built environment. To build on this momentum, the Built Environment Infection Prevention Initiative (BEIPI) has been created, led by the Healthcare Infection Society and supported by industry partners.

The purpose of the Built Environment Infection Prevention Initiative (BEIPI) is to reduce the burden of antimicrobial-resistant (AMR) healthcare-associated infections (HCAIs) by embedding infection prevention principles into the planning, design, construction and operation of healthcare buildings. BEIPI seeks to bring together professionals across IPC, NHS capital and estates, procurement, manufacturing, the healthcare design and construction industry to foster collaboration, openness and create safer spaces for occupants by influencing policy, education and communication.

If you would like to join the initiative please sign up at his.org.uk or use the QR code.

Join the Built Environment Infection Prevention Initiative (BEIPI)

Healthcare Infection Society

HIS is a charity (1158172) registered in England and Wales.

www.his.org.uk