How do perceptions of hygiene and cleanliness influence IPC behaviours in homes, everyday lives and healthcare settings?

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Hosted by Jim Gauthier

The International Scientific Forum on Home Hygiene (IFH)

Established 1997: not-for profit, non-commercial, non-government organisation.

Primary objectives: Developing and promoting hygiene in home and everyday life settings based on scientific evidence

Target audience

- Gvt Health agencies, scientists, opinion formers, health professionals, media, private sector
- IFH does not communicate directly with public – we support those who do

IFH Website offers: Scientific reviews, guidelines, training resources, fact/advice sheets

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Public understanding of hygiene

Recent IFH polling (2018-24) in UK and Europe shows that, although public are concerned about hygiene, they are confused about what hygiene is and how it differs from cleanliness.

This has a negative impact on ability to practice effective hygiene

This presentation will:

- Focus on public hygiene behaviour in homes and everyday life in public spaces

Invite you to consider

- Implications of our approach for hand and environmental hygiene in public and healthcare settings?
- How misperceptions acquired at home may impact negatively on how cleaning and healthcare professionals interpret hospital guidelines?

What is Targeted Hygiene?

based on well-accepted principles of risk management

This means focusing practices **at the times (key moments) and the places (critical control points)** to break the chain of infection

Put simply - It's about **"halting the journey of the germ"** to **reduce exposure/infection risk** rather than eliminating microbial hazard

https://www.ifh-homehygiene.org/online-learning/breaking-chain-infection-our-homes-and-everyday-lives-practical-approach-encourage

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The chain of infection - “journey of the germ” in home settings

Main sources of infection

People, foods, Domestic animals

Journey of the germ

- During our daily lives we perform actions that cause harmful microbes to be spread from these sources - in a way that we become exposed to them through mouth, nose, etc
- Targeted Hygiene is about acting at these “moments” to prevent spread of infection

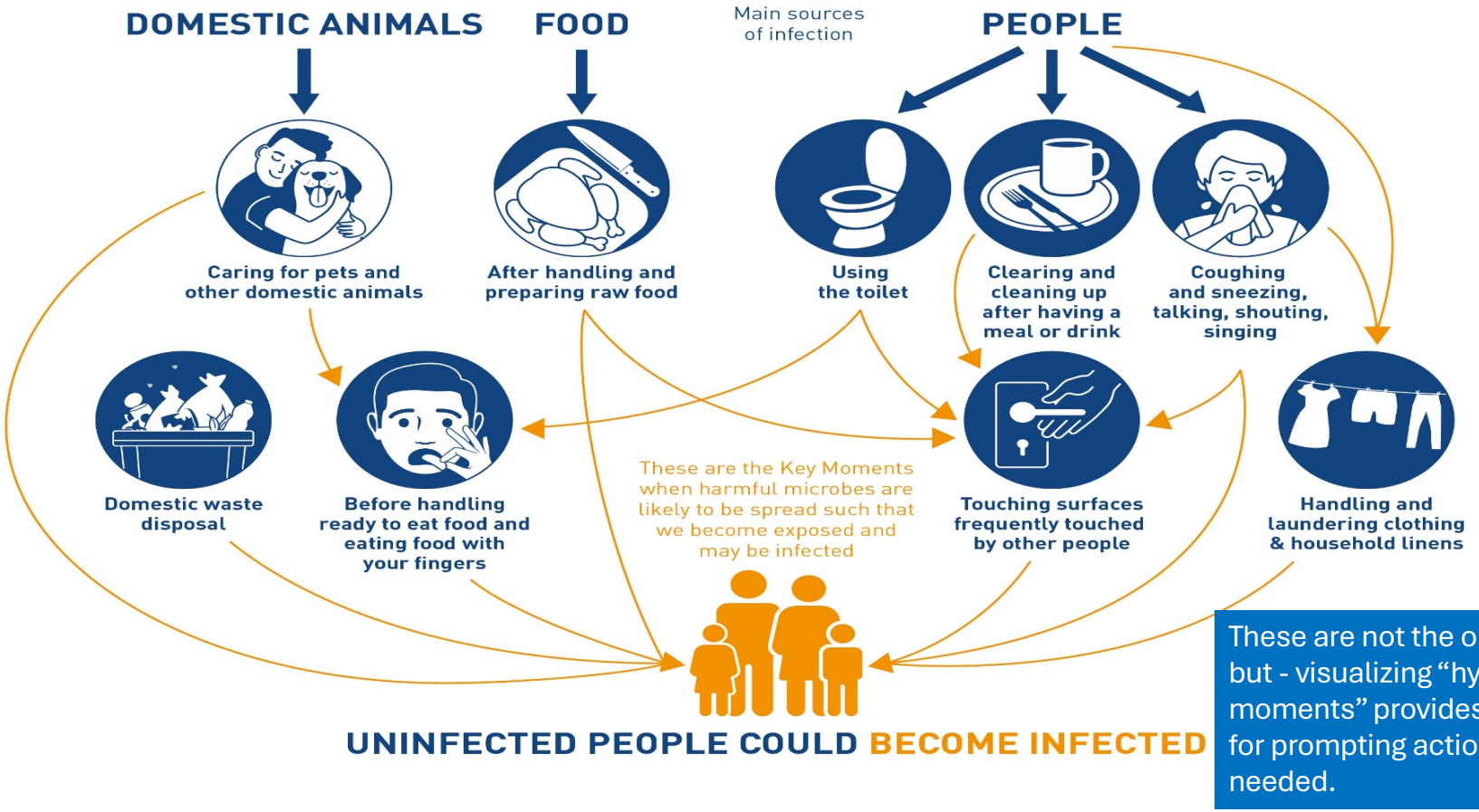
If we are not exposed to harmful microbes, we cannot become infected!

Doing a standard risk assessment for the home involved:

1. Assessing people's actions through daily life at home
2. Assessing transmission routes of hygiene-related infections using microbiological data (sources, transfer and exposure rates and dose)
3. Identifying risk moments

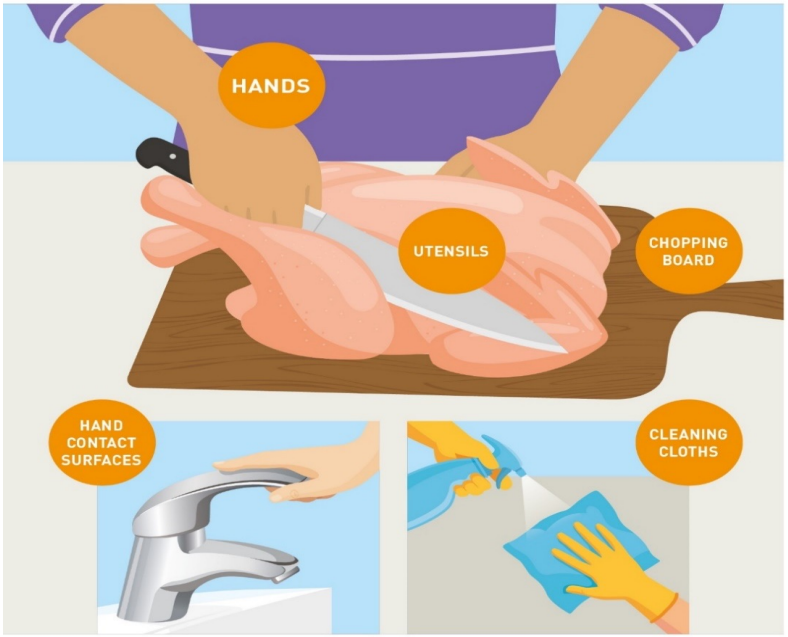
- Tabulating and comparing risk moments for spread of RT, GI, II, skin infections shows many are common to several types of infection
- By narrowing this down we identified **9 key risk moments** which account for the majority of infection incidents in home settings

The 9 key moments in our daily lives when hygiene really matters



These are not the only moments - but - visualizing "hygiene moments" provides sound basis for prompting action when needed.

Key Moment 3:
After handling and preparing raw foods



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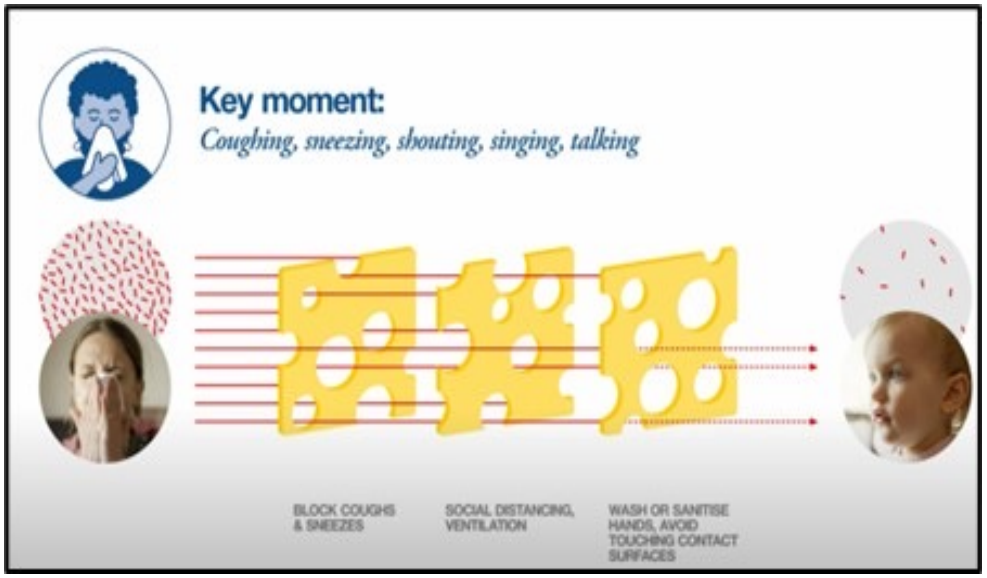
When to act, then where, then how

Checklist for cleaning or intervention	Decontaminate by*
Hands	Handwashing with soap, followed by thorough rinsing under running water
Chopping board	Clean with a cloth in hot soapy water, apply disinfectant as directed, rinse and dry
Kitchen utensils	Machine dishwash, or clean with a cloth in hot soapy water, then rinse under clean running water
Surfaces touched by unwashed hands during food preparation e.g taps or cupboard door handles	Clean with detergent, then disinfect as directed or use a disinfectant cleaner
Cleaning cloths and equipment	Rinse in hot soapy water, disinfect as directed and dry thoroughly, or use a disposable cloth

Core principle of Targeted Hygiene: although hand hygiene is central to all key moments, it must be combined with other practices to maximise risk reduction

The Swiss Cheese Model



Each slice of cheese represents a barrier to spread of infection

The holes show that no single action is 100% effective

SCM shows how barriers work together to reduce overall risk of infection

This is despite the fact that some interventions may have a greater impact than other

How do we communicate Targeted Hygiene to the public?

- Stopping the JOG is a story - storytelling is an accepted approach for behaviour change

2024 Trial In collaboration with UK Behavioural Insights Team:

- Develop short video using people, animations, to tell the story of Targeted Hygiene how it halts the journey of the germ
- Conduct a desk-based Intervention to quantify whether TH, communicated in this manner, develops intention to behave in an effective way to break the JOG.

Developing Targeted Hygiene in our homes and everyday lives as part of healthy living:
Long form 12 mins: https://youtu.be/1PvMsu5ZEB0
Short form 7 mins: https://youtu.be/0ql_c4-ujCc

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Sample of 2,539 English adults randomised to see 1 of 2 videos

Control group (non- hygiene-related health video)
viewing time: 6min

Intervention group (Targeted hygiene video)
viewing time: 7m

asked questions about

1. **Hygiene comprehension: the journey of the germ and Targeted Hygiene**
2. **Behavioural intentions in real life risk scenarios**

Participants given answer options and asked to identify 1 or more options that fitted their understanding of hygiene

1. Impact of intervention on Hygiene Comprehension

Viewing the Targeted Hygiene video significantly increased comprehension of how harmful microbes spread and how targeted practices reduce spread of infection

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Understanding "the journey of the germ"

Percentage that selected each option	Control group (CG), (n=1,212)	Intervention group (IG) (n=1,327)
Q1: How are most common **germs that cause infections** introduced into the home? Select 3 answers.		
Raw foods: meat, fish, poultry, vegetables, fruit	70%	79%
People	68%	69%
Pets	25%	47%
The toilet	50%	43%
Indoor and outdoors, dirty floors, surfaces, shoes clothes,air	41-46%	29-33%
Q 2: How are **harmful** germs most commonly spread in the home? Select 6 answers.		
When we cough, sneeze, talk loudly or sing	84%	90%
When we handle and prepare raw food	83%	89%
When we eat with our fingers without washing our hands	83%	84%
When we touch surfaces other people regularly touch	82%	81%
When we use the toilet	78%	80%
When we handle, care for and stroke our pets	49%	70%
When they breed on dirty surfaces and spread	77%	60%
When things get untidy and messy	22%	18%

correct

Incorrect/inappropriate

Understanding concept of Targeted Hygiene

Percentage that selected each option	Control, (n=1,212)	Intervention group (n=1,327)
Q 3: When should you practise hygiene to reduce the spread of harmful germs? 1 choice only		
At key moments/times when there is risk of harmful germs spreading	22%	34%
As often as you can	64%	52%
When somebody is ill/At least once a week/When things look dirty	3-6%	3-6%
Q4: What is the best way to reduce the risk of harmful germs spreading in your home? Choose 1 answer		
Recognising and acting at key moments where cleaning or handwashing will reduce the spread of harmful germs	33%	45%
Keeping our home clean and washing our hands frequently	36%	31%
Deep cleaning with antibacterials and washing hands frequently	31%	24%

correct

Incorrect/inappropriate

2. Impact of intervention on behavioural intentions in risk situations

When questioned about behaviour intentions in real life scenarios, both CG and Intervention IG showed high level of intention to act at correct moments.

NSD between responses of IG and CG

However, what the quantitative trial failed to indicate was that both groups equally likely to express intention to perform additional hygiene habits in situations which would have little impact.

Intention to practice Targeted Hygiene in a GI and RT infection scenario

Q: When a family member has an infection, how likely are you to do the following **(in addition to handwashing)**	Gastrointestinal infection		Respiratory infection	
% who said they are "somewhat/very likely" Select any from 7 options	Control (n = 600)	Intervention (n = 678)	Control (n = 612)	Intervention (n = 649)
Clean surfaces commonly touched by others	95%	92%	91%	91%
Wash/replace cloths immediately after use to clean kitchen and toilet surfaces	90%	90%	80%	85%
Disinfect the toilet after use by the sick person	93%	90%	81%	82%
Open windows	89%	89%	88%	89%
Wear masks	44%	46%	41%	44%
Deep clean your home	69%	70%	61%	58%
Wear gloves	62%	60%	41%	44%
NSD between means for CG and IG	80%	80%	75%	75%

correct

Inappropriate to risk situation

3. Misperceptions about Cleanliness

Examples of inappropriate answer options to hygiene comprehension questions indicating belief that hygiene is achieved by untargeted home cleanliness

% agree	Control	Intervention
Harmful germs are introduced into the home via dirty floors and surfaces	41%	29%
A common way that harmful germs spread in the home is when they breed on dirty surfaces and spread	**77%**	**60%**
Key risk moments are when floors/surfaces look dirty	20%/35%	18%/29%
Deep cleaning with antibacterials & frequent handwashing is the best way to prevent spread of harmful germs	31%	24%

- significant proportion of both CG **and** IG selected these as one of their options.
- results suggest video impacted on IG to dispel misconceptions.

SUMMARY OF FINDINGS

	What did we find out from the trial	Implications
Hygiene comprehension	1. Intervention increased Targeted Hygiene comprehension within the IG	• disconnect between "knowing" key hygiene moments and applying them • Both groups relied on pre-learnt knowledge of key hygiene moments rather than reasoned behaviour
	2. Both CG and IGs could identify key moments for hygiene	
Behavioural intention	3. Intervention did not increase intention of IG to practice TH in real life scenarios? 4. Both groups equally likely to express intention to perform additional hygiene habits which would have little impact.	
Misunderstanding of hygiene and cleanliness	5. Both groups believed germs breed/spread - cleanliness needed for extra hygiene benefit	• By increasing hygiene comprehension we could overcome this barrier to effective hygiene behaviour
	6. But Intervention reduced misperceptions	

UK Polling 2021 what are the important moments to wash/sanitize hands

		After coughing / sneezing into hands	After touching surfaces frequently touched by other people	Before eating food with fingers	Arriving home from work, school, etc.	After handling raw meat/ poultry	After using the toilet	After touching pets
To prevent spread of any infection		84%	89%	85%	84%	88%	89%	59%
To prevent spread of COVID		90%	86%	89%	86%	84%	90%	56%

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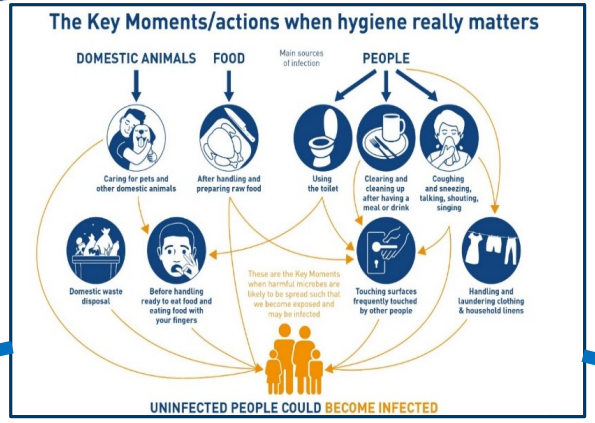
The need to build hygiene resilience

- During the pandemic, health agencies knew public hygiene behaviour was key to mitigating spread but were ill-prepared for this role.
- In response to COVID, gvts/health agencies inc WHO have pledged to build health resilience inc. **hygiene resilience**
  - Ability, at home, in workplace and elsewhere to adapt behaviours to meet future challenges - epidemics, pandemic preparedness, tackling AMR, health inequalities, protecting health services

- Building hygiene resilience is doable based on RM, but is a 2-stage process

Stage 1 Establish TH as part of routine daily life – reduce endemic infection rates and ab prescribing



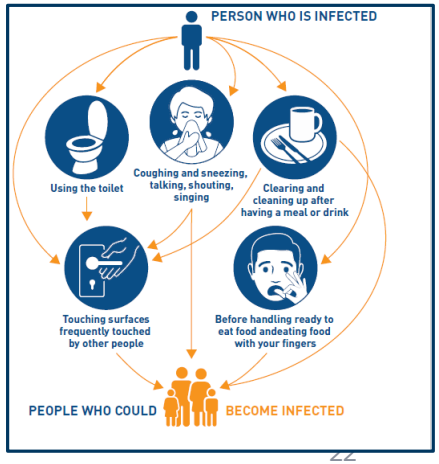
Norovirus

Stage 2 Enhanced/adapted framework:

- Schools, offices, hospitality etc
- Outbreaks /seasonal issues
- Pan preparedness
- Protecting vulnerable groups at home
- Reduce pressure on healthcare settings

Stage 2 depends on stage 1 being in place

Colds flu COVID etc



Building a resilient multibarrier approach allows:

- Not only - advice to be intensified, relaxed to meet ongoing challenges
- Allows health agencies to weigh benefits of advising or mandating enhanced measures, against disrupting social, work and educational activities – and then later relaxing them

- Building this resilience is vital for sustaining public engagement/confidence /trust in the face of policy changes

- “Targeted Hygiene makes sense”

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- During pandemic, poor comprehension that ventilation, air filtration, masking, social distancing, hand/contact surface hygiene **work together** to maximise risk reduction had a -ve impact.
- Inappropriate messaging, based on individual pieces of clinical data, encouraged public to prioritize some actions and abandon others, rather than sustaining a multibarrier approach:

- *Daily Mail, May 2020 "clinical evidence for mask-wearing "not very strong in either direction"*
- *'Financial Times, 2021 'We need to double down on handwashing, everything else is irrelevant"*
- *Daily Mail, July 2021 "Why I'm cutting back on handwashing, but keeping my mask on*

Why Susan Monarez is the Right Choice to Lead the CDC, Time Magazine, March 2025

"During the COVID pandemic we saw the consequences of a too-clinical mindset" where decisions about mitigating spread outside healthcare settings were based on the same principles as those aimed at high-level protection of individual patients in healthcare, based on RCT data.

"They reflected a framework centered on patients, not populations. Leading the CDC today requires the opposite. It demands someone who understands the nuances of population-level data, policy tradeoffs, and systems design, which Monarez does".

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Developing Global hygiene behaviour and hygiene resilience

To what extent could a risk management approach be used globally for developing hygiene resilience?

Since basic scientific principles of spread of hygiene-related infections are the same globally, it ought to be possible?

- In LICs major focus is on handwashing to reduce diarrhoeal disease, evidence-based through RCTs
- By adopting RM, HW can be combined with other practices as needed to address global ID challenges?

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In adapting TH across HI to LI resource settings, and within/ between countries/regions - major differences across the spectrum must be addressed

In HMICs – access to water and sanitation not the key problem

In LMICs – limited access to clean water and effective sanitation is the main problem

In HMICs people have basic comprehension of germs and how they spread, but are confused by widely publicised myths and misunderstandings.

In low resource settings people have limited understanding of how infections are caused and spread.

IFH proposed policy for developing effective public hygiene behaviour

Developing public hygiene resilience to reduce community-based infections and prepare for future epidemics and pandemics: a strategy for action. IFH 2024
https://ifh-homehygiene.org/wp-content/uploads/2024/10/16-8IFH-policy-doc-back-to-basics.pdf

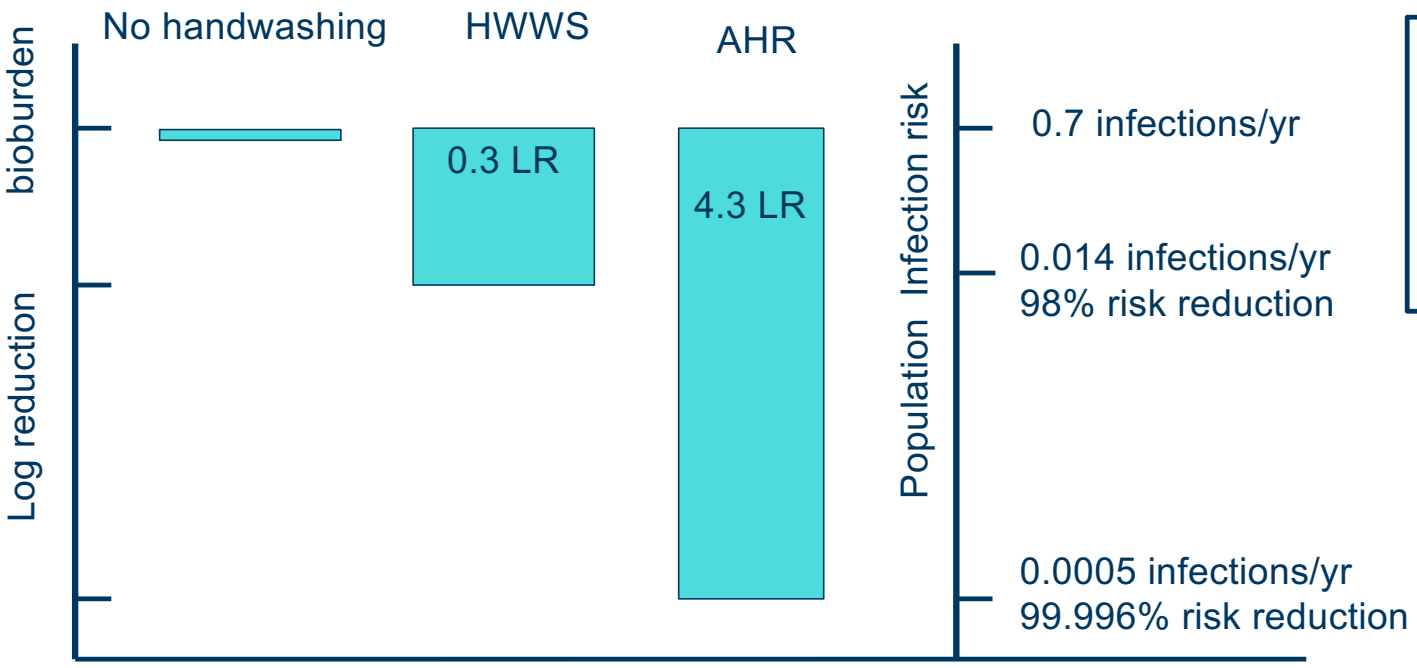
1. Developing risk-based approach approaches

- Gaining acceptance that risk management approach is a prerequisite for developing effective and resilient hygiene behaviour in homes - and EDL in public spaces
- Gain recognition that it **already is** a well-accepted, scientific evidence-based approach
- "This approach makes sense but, where is your evidence base" - i.e RCT data - reluctant to consider whether a "clinical" approach is appropriate for tackling "population risk" - **You don't know what you have not heard about**

- **Quantitative Microbial Risk Assessment** - enables using quantitative data to estimate impact of interventions on infection rates.
- IFH working with Reynolds et al, UofArizona on QMRA for use in HEDL hygiene

QMRA e.g. health outcome of hygienic cleaning of hands:

Impact of hand hygiene on US population risk (200 million) of hand to mouth transmission of *E. coli* O157 after handling contaminated minced beef



Mathematical modelling of published data on sources/ survival/ transfer & exposure rates/ infectious dose

Using this data, we can then set – and work to - "safety target levels" we think appropriate to the situation

Haas et al. Int J Hyg Environ Health. 2005;208(6):461-6.

2. Developing hygiene behaviour change

- By further developing strategies involving visualized storytelling, it should be possible to turn learned hygiene habits into effective hygiene behaviour.
- The JOG story enables us to engage the public through visualizing hygiene practices – rather than a list of actions to be memorized.

- Further work required to determine:
  - The root cause of disconnect between TH comprehension and applying it to real life scenarios, how to overcome it
  - How we dispel the misperception about cleanliness which are a barrier to effective behaviour?

Misleading messages communicated through by media articles have eroded public understanding

So - you think your bathroom is clean?
Daily Mail – 10th April 2017

"Here's a map to help identify where **germs love to lurk** and help you to banish the bugs"

"Bathroom is a haven for bacteria, **breeding in places you believe are sparkling clean**"

But these millions are not harmful – and possibly are beneficial

Media images of spraying, fogging rituals that public health departments believe make us safe

If public health authorities are doing this – it must be correct!

A team disinfecting the Qintai Grand Theatre in Wuhan, China, in January. Credit: Xia Junjun/V

he workers douse the streets with disinfectant after the region was placed into lockdown on

3. Systems approach/systems thinking

- COVID highlighted importance of IP in public spaces (offices, schools, hospitality, public transport)
- Huge investment of time and resource in "deep cleaning" protocols for public spaces in the belief that this would "keep us safe"
- This missed the point - "Keeping premises clean" only part of the story
- Managing infection risk depends on public behaviour in these spaces
  - Managers must also adopt responsibility for facilitating/encouraging effective behaviour.
  - IFH working with British Cleaning Council towards developing "hygiene systems" for public spaces
  - Implications for environmental hygiene/cleanliness in healthcare settings?

Targeted Hygiene intervention in a large public setting

- Large-scale intervention during 2020 UN Climate Change Conference (COP26) at the height of pandemic
- Detailed risk assessment of public spaces to identify critical moments/control points for hand and surface hygiene during sessions
- **Hygiene task force** trained to deliver intervention ensuring disinfection of contact surfaces during sessions, **and** hand/ high touch surface hygiene behaviours by delegates
- **Cleanliness of venue** was delivered by cleaning contractors

Conference delivered without COVID-19 outbreak

https://ifh-homehygiene.org/review/case-study-report-targeted-hygiene-a-risk-based-approach-to-applying-policies-and-hygiene-interventions-in-public-settings-and-large-events-a-case-study-of-hygiene-interventions-at-cop26-2021/

Public understanding of difference between cleaning and hygiene

- **55-68%** • **Hygiene is** more than cleaning, it's about protecting health
- **15-20%** • **Cleaning** and **hygiene** are the same thing – if a surface is clean it's also hygienic
- **16-28%** • **Cleaning** means using a cleaning product, **hygiene** means using a disinfectant

2020 Polling study across 25 EU countries

Since cleaning professionals move between work & home lives, these misconceptions likely impact on how they interpret Cleaning & Hygiene guidelines?.

Developing household hygiene to meet 21st century needs: A collaborative industry/academia report on cleaning and disinfection. 2021. https://www.ifh-homehygiene.org/review/developing-household-hygiene-meet-21st-century-needs-collaborative-industryacademia-report

What is the function of hygiene and cleanliness in public settings?

Environmental Hygiene/cleanliness in public and healthcare settings has 2 fundamentally different functions:

Hygiene is aimed at reducing risk of exposure to pathogenic microbes	**"Visual cleanliness" is absence of visible dirt**
Reducing contamination on hands/ surfaces/air to an acceptable (safe) level	Physical removal of dust, soil etc until visibly clean
Is it important? – yes!	Is it important? yes! • It is the means by which people (and staff) judge whether clean food, safe care is being delivered

Professional/institutional cleaning expert said **“If someone asks me to clean that surface…I don’t know what to do unless I know what the surface will be used for.”**

Guidelines for hospitals/public spaces lack clarity on what is achieved if guidelines are followed – infection prevention or cleanliness?

Its never discussed or explained. Why?

What is the impact of our work?

- People are aware of key hygiene practices (hands, surfaces, etc) but lack comprehension of when/where to apply them.
- Prescriptive guidance is not enough, need to build practical knowhow of how hygiene halts *the journey of the germ*
- We have to work proactively to dispel hygiene myths/misunderstandings that act as barrier to behaviour change
- Wider implications – trained professionals likely to have ingrained habits/beliefs developed during formative years which act as a barrier to effective environmental hygiene behaviour in the workplace
- Adopting a risk management approach provides a means to developing resilient hygiene behaviour to address C21st needs

Hygiene in home and everyday life is a vital part of infection prevention – so why is it underinvested?

- Finite resource inevitably devoted to fire fighting in healthcare settings, leaves limited resource to fight issues that fuel this fire

- Reluctance to consider RM as appropriate to tackling "population risk" - More of the same "wash your hands frequently"

- Need leadership with sole responsibility for HEDL hygiene/power to drive change:
  - advocating for action against competing health issues
  - Recognise differences between everyday life and healthcare hygiene

- Risk management offers a way to build hygiene behaviour and resilience - and is also doable without massive investment - by building on existing knowledge of key hygiene practices. – its not rocket science!

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AUGUST

7 ... How Do Perceptions of Hygiene and Cleanliness Influence Infection Prevention Behaviours in Our Homes and Everyday Lives, and in Healthcare Settings?
With Dr. Sally Bloomfield, UK

20 ... Insertion and Maintenance of Bundles for Peripheral IVs
Australasian Teleclass
With Dr. Gillian Ray-Barruel, Australia

26 ... Barriers to Implementing IPC Programs in Low Resource Settings and How to Overcome Them
Afro-European Teleclass
With Prof. Shaheen Mehtar, South Africa

SEPTEMBER

18 ... Resource Sustainability and Challenges in the Supply Chain: Implications for Infection Prevention
With Prof. Ruth Carrico, US

23 ... Patience, Patients and Persistent Antimicrobial Resistance
Afro-European Teleclass
With Colm Dunne, UK

25 ... Development of Food Safety Training Materials Through Memory Anchors and Elevated Learning
With Prof. Keith Warriner, Canada

29 ... *IPS Conference Broadcast* – Cottrell Lecture
Afro-European Teleclass
With Dr. Neil Wigglesworth, UK

29 ... *IPS Conference Broadcast* - From Reminder to Reflex: Making IPC Second Nature
Afro-European Teleclass
With Prof. Michael Borg, Malta

30 ... *IPS Conference Broadcast* - Antimicrobial Stewardship: At the Heart of Infection Prevention
Afro-European Teleclass
With Prof. Martin Llewelyn, UK

OCTOBER

15 ... What Can Knowing Something About the Evolution of *Clostridium difficile* Teach Us About IPAC?
Australasian Teleclass
With Prof. Thomas Riley, Australia

20 ... Special Lecture for International Clean Hospitals Day

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