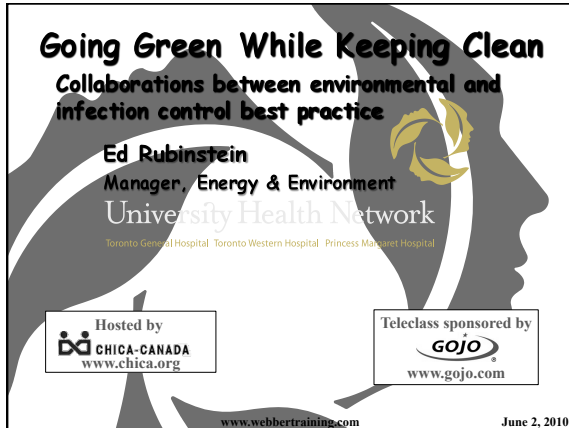




Going Green While Keeping Clean
Ed Rubinstein, University Health Network, Toronto
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Going Green While Keeping Clean
Collaborations between environmental and infection control best practice

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Toronto General Hospital Toronto Western Hospital Princess Margaret Hospital


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Presentation Outline
Collaborations, Challenges, Lessons Learned and Myths

- Designing a Clean & Green Hospital
 - Make it easy to clean
 - Make it energy efficient
 - Make it water efficient
- Operating a Clean & Green Hospital
 - Reduce
 - Reuse
 - Recycle
- Creating a Clean & Green Culture






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Designing A Clean & Green Hospital

Make It Easy To Clean Collaboration



An easy to clean hospital means...

<p align="center"><u>clean</u></p> <ul style="list-style-type: none"> • fewer places for pathogens to live 	<i>and</i>	<p align="center"><u>green</u></p> <ul style="list-style-type: none"> • less water • less cleaning chemicals
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Make It Easy To Clean Challenge

How do you make a hospital that doesn't look like a hospital?

Make It Easy To Clean Challenge

Great design vs. easy to clean



source: www.recbagger.com




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Make It Easy To Clean
Challenge

Great design vs. easy to clean

Make It Easy To Clean
Collaboration

Not so great design vs. easy to clean

Make It Easy To Clean
Lesson Learned

Choose the right materials for the right location

	patient areas	non-patient areas	your house
cloth upholstery	○	?	✓
leather	○	?	✓
wood floors	○	?	✓
carpet	○	?	✓
ceramic tiles	○	?	✓

Make It Easy To Clean
Lesson Learned

Choose the right materials for the right location

- Things to keep in mind
 - activities taking place in the area
 - patient care vs. administrative areas
 - cleaning products that may be used
 - potential for heavy traffic

Make It Easy To Clean
Myth

Myth

- Natural flooring materials (e.g., linoleum) create a mould risk

Reality

- Damp conditions cause mould
- Proper installation, cleaning and maintenance of any floor is key

Make It Easy To Clean
Myth

Myth

- Antibacterial treatment and coatings are important factors when evaluating materials

Reality


- Antibacterial claims often need to be validated
- Treatments and coatings unlikely to last throughout the product's lifetime

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Make It Easy To Clean
Lesson Learned

Flooring

tiles vs. sheet



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Make It Easy To Clean
Lesson Learned

Flooring

<p align="center">tiles</p> <ul style="list-style-type: none"> • have cracks that can catch dirt and water • easy to repair • not advised for patient care areas 	vs.	<p align="center">sheet</p> <ul style="list-style-type: none"> • seams can be sealed • can have cove (rounded) base at wall for easier cleaning
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Look for “wax-less” flooring options.

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Make It Easy To Clean
Challenge

PVC - When Clean & Green Diverge...

<p align="center">clean</p> <ul style="list-style-type: none"> • easy to clean • inexpensive • versatile • easy to work with 	vs.	<p align="center">not green</p> <p><i>“PVC (polyvinyl chloride or vinyl) is the worst plastic from an environmental health perspective...”</i> -Healthy Building Network</p>
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Make It Energy Efficient
Challenge

HVAC - When Clean & Green Diverge...

HVAC = Heating, Ventilation and Air Conditioning

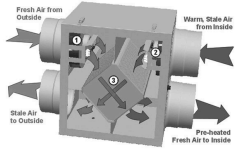
<p align="center">clean</p> <ul style="list-style-type: none"> • high number of air changes • 100% outside air sometimes required 	vs.	<p align="center">green</p> <ul style="list-style-type: none"> • minimize air changes • re-circulate air
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Make It Energy Efficient
Collaboration

Heat recovery

- Before exhausting air from the hospital, recover some of the heating, cooling and/or humidity that was added to it

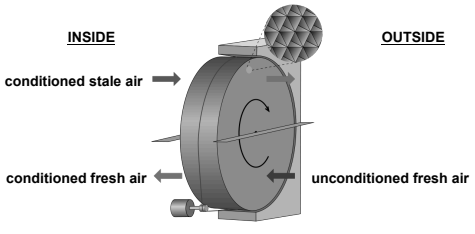


source: www.ecobuild.ie

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Make It Energy Efficient
Collaboration

Heat recovery – heat wheels



source: Michael Schmid, Wikipedia Commons

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


Make It Energy Efficient
Myth

Myth

- There is potential for cross contamination between fresh and stale air streams in heat wheels

Reality



- Heat wheels are already in common use in hospitals; allowed by CSA standards
- Most often used in applications with high fresh air intakes
- Likely would not use heat wheels for negative pressure isolation rooms

Make It Energy Efficient
Collaboration

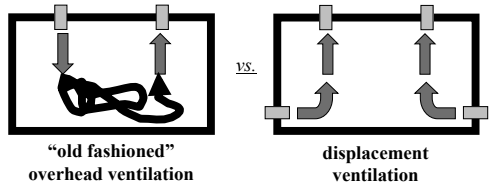
Heat recovery – coil loop recovery

- Uses a loop of liquid to transfer heat between fresh air and exhaust
- Prevents cross contamination between air streams
- Not as efficient as a heat wheel






Make It Energy Efficient
Future Collaboration?

Displacement ventilation



“old fashioned” overhead ventilation vs. displacement ventilation






Make It Energy Efficient
Future Collaboration?

Displacement ventilation

- May allow for fewer air exchanges without sacrificing infection control
- Early results are promising
- Healthcare Ventilation Research Collaborative conducting further research

“Displacement ventilation at 4 air changes per hour provides better particle control, ventilation effectiveness and thermal comfort than overhead ventilation at 6 air changes per hour.”







Make It Water Efficient
Collaboration

Hands free sinks

<p align="center"><u>clean</u></p> <ul style="list-style-type: none"> • fewer hands touching the same thing 	<u>and</u>	<p align="center"><u>green</u></p> <ul style="list-style-type: none"> • not relying on hands to turn sinks off
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Look for self charging hands free faucets.







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Operating A Clean & Green Hospital

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**Reduce
Biomedical Waste** 


Myth

- All isolation room waste needs to be disposed of as biomedical waste

Reality



- While all isolation room waste needs to be contained to prevent spread of infection, most does not require special disposal


 

**Reduce
Biomedical Waste** 

Collaboration

- Joint education from Infection Control and Environmental Services
 - appropriate handling of waste required within hospital
 - e.g., MRSA, VRE, C. difficile isolation room waste can be disposed of as general waste (if not grossly soiled)
 - *Handling of waste materials in health care facilities and veterinary health care facilities (CSA Z317.10-09)*
 - check local requirements!



**Reduce
Toxic Chemical Use** 


Myth

- Everything in a hospital needs to be disinfected

Reality



- Only some hospital areas need to be disinfected


 

**Reduce
Toxic Chemical Use** 

Collaboration



- Joint assessment between Infection Control and Environmental Services to determine when cleaning is needed and when disinfecting is required
 - good housekeeping practices can ensure disinfection is effective without unnecessary use of harsh chemicals
 - many cleaning products – whether conventional or “green” – have little or no impact on infection control


 

**Reduce
Toxic Chemical Use** 

Lessons Learned



- May be paying a premium for disinfecting chemicals when only “regular” cleaning products will suffice
- *Ten Step Guide to Green Cleaning Implementation (Practice Greenhealth)*
 - www.h2e-online.org/docs/h2e10stepgreenclean-r5.pdf

**Reduce
Toxic Chemical Use** 


Future Collaboration?

- new Ecologo certification for hand sanitizers
 - standard CCD-170
 - less harmful raw materials
 - products should include “biobased” content
 - recyclability of packaging
 - www.ecologo.org/en/criteria/subpage.asp?page_id=197

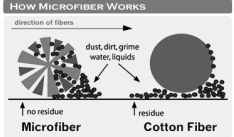
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Reduce
Toxic Chemical Use and Water Use




Future Collaboration?

- microfibre mops
 - synthetic, ultrafine fibres
 - nature of fibre means mops require less water and chemical than traditional mops
 - claims of reduced bacteria through use of microfibre still being validated



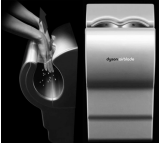
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Reduce
Waste and Energy




Future Collaboration?

- “next generation” hand dryers
 - reduces need for paper towels in washrooms
 - use less energy than warm air hand dryers; water is pushed off of hands
 - hygiene claims still need to be validated




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Reduce
Energy Use




Collaboration – HVAC Scheduling

- Turning off the fans when the room is empty
 - minimum air changes for critical areas (e.g., ORs, PACU, etc.) set by CSA
 - Special Requirements for Heating, Ventilation, and Air Conditioning (HVAC) Systems in Health Care Facilities (CAN/CSA-Z317.2-10)*



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Reduce
Energy Use




Collaboration – Filter Changes

- A preventative maintenance program to ensure that HVAC filters are regularly changed
 - ensures air quality is maintained
 - reduces inefficiencies from clogged filters

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Reduce
Pharmaceutical Waste Down The Drain




Collaboration

Avoiding disposal of drug waste down the drain...

<p align="center"><u>clean</u></p> <ul style="list-style-type: none"> may avoid development of antibiotic resistance helps prevent formation of bacterial biofilms in drains and pipes 	<i>and</i>	<p align="center"><u>green</u></p> <ul style="list-style-type: none"> avoids disposal of drug waste down the drain
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Reuse
Single Use Devices




Challenge

<p align="center"><u>clean</u></p> <ul style="list-style-type: none"> many pieces of equipment and supplies only validated for single use 	<i>vs.</i>	<p align="center"><u>green</u></p> <ul style="list-style-type: none"> reduction of waste through reuse of items
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**Reuse
Single Use Devices**




Collaboration

- Third party reprocessing of devices is available
 - reprocessor provides validation and assumes liability for reprocessed devices
 - usually only cost effective for expensive pieces of equipment or supplies



**Recycle
In A Hospital**





Myth


- All hospital waste is infectious

Reality

- While all waste should be handled using “routine precautions”, only a small amount of waste requires special disposal






**Recycle
In A Hospital**




Lesson Learned

- Proactive and ongoing education, both inside and outside of the hospital, is key
- Ensure a good understanding of legal and local requirements

**Recycle
Cans and Bottles**





Myth


- Cans & bottles recycling bins attract bugs

Reality

- Sorting waste into different containers will not attract more bugs






**Recycle
Cans and Bottles**




Lessons Learned

- Garbage can attract bugs, regardless of how or where it’s collected...it doesn’t matter if those cans & bottles are recycled or thrown out
 - Good housekeeping keeps bugs away; regular pick-up of waste is key
 - Line “cans & bottles” bins with clear bags that will allow waste to be identified, but prevent spillage of liquids.

**Recycle
In Sensitive Areas**





Myth

- Recycling cannot be done in sensitive areas such as the OR or ICUs

Reality

- Sorting waste into different containers does not increase infection risks


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Creating A Clean & Green Culture Challenge

How do we get staff to do what they already know they should be doing?


<p><u>clean</u></p> <ul style="list-style-type: none">• hand washing	<p><u>green</u></p> <ul style="list-style-type: none">• turning off lights, recycling, etc.
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Creating A Clean & Green Culture Collaboration

Talk, listen and learn...


<p><u>clean</u></p> <ul style="list-style-type: none">• learn what your hospital's green goals are• don't pretend that you know what your hospital's green goals are	<p><u>green</u></p> <ul style="list-style-type: none">• learn what your hospital's clean goals are• don't pretend that you know what your hospital's clean goals are
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Special Clean & Green Thank You

Karen Stockton
Director
UHN Infection Prevention & Control

Dr. Susy Hota
Medical Specialist
UHN Infection Prevention & Control




Thank You

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