

A Balanced Approach to the Selection of Healthcare Flooring (presentation)

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Centre for Health Assets Australasia

HEALTH FACILITIES DESIGN & DEVELOPMENT 23-24 FEBRUARY 2010, BRISBANE

A Balanced Approach to the Selection of Healthcare Flooring

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OUTLINE

1. NSW Health Technical Series TS-7
2. Flooring 'Fitness for Purpose'
3. Floor finish classifications
4. Floor finish performance – fitness for purpose, performance, standards and regulations
5. Safety – STF, OHS, fire safety
6. Sustainability
7. Acoustics
8. Indoor air quality (IAQ)
9. Infection control
10. Colour and pattern
11. Conclusions





1. NSW HEALTH TS-7 FLOOR COVERINGS IN HEALTHCARE BUILDINGS

- Previously issued in 1988; revised in 2008 by CHAA
- Changes addressed include products, sustainability, legislation – BCA, DDA, OHS, awareness of interaction between indoor environment and occupant wellbeing
- Reviewed by flooring manufacturers, Area Health Services and industry groups
- Approved for publication late 2009 and available from AusHFG website www.healthfacilityguidelines.com.au

2. FLOORING 'FITNESS FOR PURPOSE'

Flooring for healthcare should be 'Fit for Purpose':

- Functional performance to match the users' requirements.
- Physical or functional performance
- Healing or working environment - acoustic control, colour, texture, and comfort





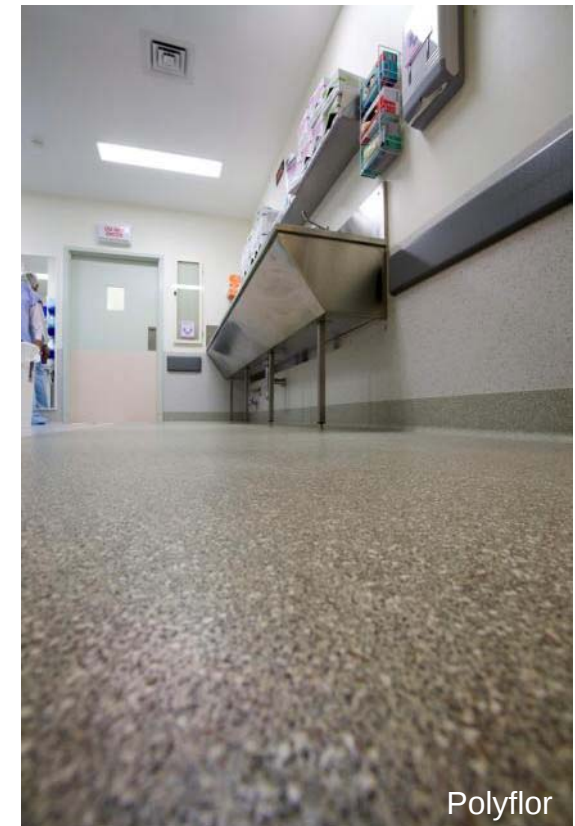
3. FLOOR FINISHES CLASSIFICATIONS

Key Classification of floor finishes

- Hard - ceramic tiles, screeds
- Resilient - semi rigid to semi soft, vinyl tiles to acoustic vinyl
- Soft - textiles

Sub classifications

- Imperviousness
- Smoothness, slip-resistance
- Fire hazard properties
- Dirt retention/control
- Component size and method of joining - sheet, tile



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4. FLOOR FINISH PERFORMANCE

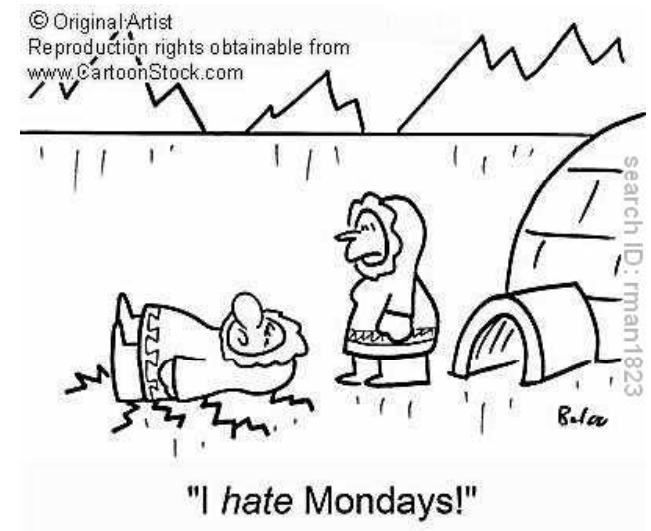
‘Fitness for purpose’, performance, standards and regulations

- Safety, OHS and manual handling
- Infection control, hygiene and odour control
- BCA - fire safety
- Interior environment quality (IEQ) - acoustic control / indoor air quality (IAQ)
- Reassuring and comfortable, including underfoot comfort
- Sustainable or low environmental impact
- Ease of cleaning and low maintenance
- Whole of Life Costing (WLC) and Life Cycle Assessment (LCA) efficiency

5. SAFETY – STF, OHS, FIRE SAFETY

Floor safety - Preventing 'slips, trips and falls' (STF) - factors:

- Frictional properties of the floor surface material
- Surface contamination - water, lotions, food
- Environment - clinical, food services, back of house, administration
- Cleaning and repair regime - reporting and corrective action
- Human (pedestrian) factors
- Footwear
- Lighting levels and reflectivity of the floor surface





5. SAFETY – STF, OHS, FIRE SAFETY

Occupational Health and Safety (OHS):

- Legislation - employee safety in the workplace.
- Building processes, design aspects, and staff work practices:
 - Fatigue on feet and legs from standing and walking - footwear a factor
 - Manual handling risks - manoeuvrability of wheeled equipment
 - Risk of slips, trips and falls (STF)
 - Risk of injuries sustained in cleaning (rough) surfaces.
- Staff consultation should occur at all stages of the planning process
- OHS and sustainable practices cover installation, removal and disposal



5. SAFETY – STF, OHS, FIRE SAFETY

Floor finishes, rolling friction, manual handling and OHS

- Standard sheet vinyl, rubber or linoleum - less rolling friction
- Foam backed products - more rolling friction, can deform under frequent heavy loads
- Dense, short tufted loop pile, direct stick carpet may be unsuitable with frequent heavy wheeled equipment

5. SAFETY – STF, OHS, FIRE SAFETY

Slip resistance flooring, occupants, floor safety and 'R' values

- Important and complex subject dealt with in TS-7
- Profiles, aggregates and surface roughness - different applications
- Duty to check the flooring test credentials and understand them
- The universally quoted 'R' value relates only to the 'Oil-wet' ramp test
- Wear, contamination or lack of appropriate cleaning significantly reduce the slip resistance of 'new' flooring
- Slips, trips and falls (STF) - liability and 'duty of care' issues





5. SAFETY – STF, OHS, FIRE SAFETY

Fire Safety

- Controlled by the BCA - Fire Hazard Properties introduced in 2003 - benefit to textile floor finishes
- Covers floor materials/coverings for Class 9a and class 9c (with or without a sprinkler system)
- Need to comply with the BCA - Fire Hazard Properties 'flammability', 'spread-of-flame' and 'smoke-developed indices'



6. SUSTAINABILITY

- Complete life cycle of a product - extraction, manufacture, installation, use, maintenance, removal and disposal
- Environmental performance covered by Commonwealth and State policy and legislation
- Government Procurement Policy relating to Ecological Sustainable Development (ESD) in Procurement
- Environment Performance Report (EPR) system - Performance in energy, water, materials, indoor environment, biodiversity and transport
- Materials assessed within 'Life cycle analysis' (LCA) and 'Whole of life costing' (WLC)



6. SUSTAINABILITY (continued)

- ISO 14000 - environmental auditing, environmental performance evaluation, environmental labeling, and life-cycle assessment
- The Building Research Establishment (BRE), UK for Environmental Profiles uses Life Cycle Analysis (LCA) standardised method of identifying and assessing the environmental impacts of building materials over their life cycle
- The Green Building Council of Australia (GBCAUS) - 'Green Star - Health as built' tool for analysis and rating healthcare facilities
- Materials and IEQ (indoor environment quality) account for approximately 40% of the available credits.



6. SUSTAINABILITY (continued)

- **GBCA - PVC Minimisation Credit Review – 2010** – public comment period closed 19 Feb 2010; new PVC credit will be implemented into the Green Star rating tools in March 2010 following consideration of stakeholder comments.
- Aimed at stimulating ‘demand for best practice, responsibly-produced PVC products in Australia and act as a driver for positive change within the PVC industry’.
- Under the revised credit, two points available towards the GS rating for project flooring, cable, pipe and conduit meet the GBCA Best Practice Guidelines.
- In the future GBCA may develop a life cycle analysis approach to the GS Materials Category which compares the health & environmental impacts of all building materials.

(<http://www.gbca.org.au/green-star/materials-category/pvc-minimisation-credit-review/2716.htm>, accessed 18 Feb 2010)



7. ACOUSTICS

- Noise generated by footfalls, fixed and mobile equipment, communication devices, staff activities, speech and a variety of internal and external sources.
- Floor surfaces control airborne and impact generated sound
- Sound control assists the healing process In patient accommodation areas
- Sound control = home-like environment
- Sound control in residential aged care = good working environment in staff areas - OHS requirements
- The acoustic requirements in the BCA part FO5 apply to 9c aged care
- AS/NZS 2107: Recommended Design Sound Levels and Reverberation Times for Building Interiors



8. INDOOR AIR QUALITY (IAQ)

Affected by:

- chemical contaminants from inside and outside the building - these include volatile organic compounds (VOCs)
- biological contaminants, (e.g., bacteria, moulds, pollen)
- inadequate ventilation due to ineffective heating, ventilating and air-conditioning systems.
- VOC emissions come from flooring coverings/finishes, underlays, skirtings, adhesives, sealants, cleaning agents and surface treatments.
- Floor products should be low-VOC emitting, non-toxic, and chemically inert (contain concentrations of VOCs to prescribed limits).
- Green Star - Health as built tool includes IEQ credits
- Products may carry GREENGUARD Environmental Institute (GEI) or other similar certification

9. INFECTION CONTROL

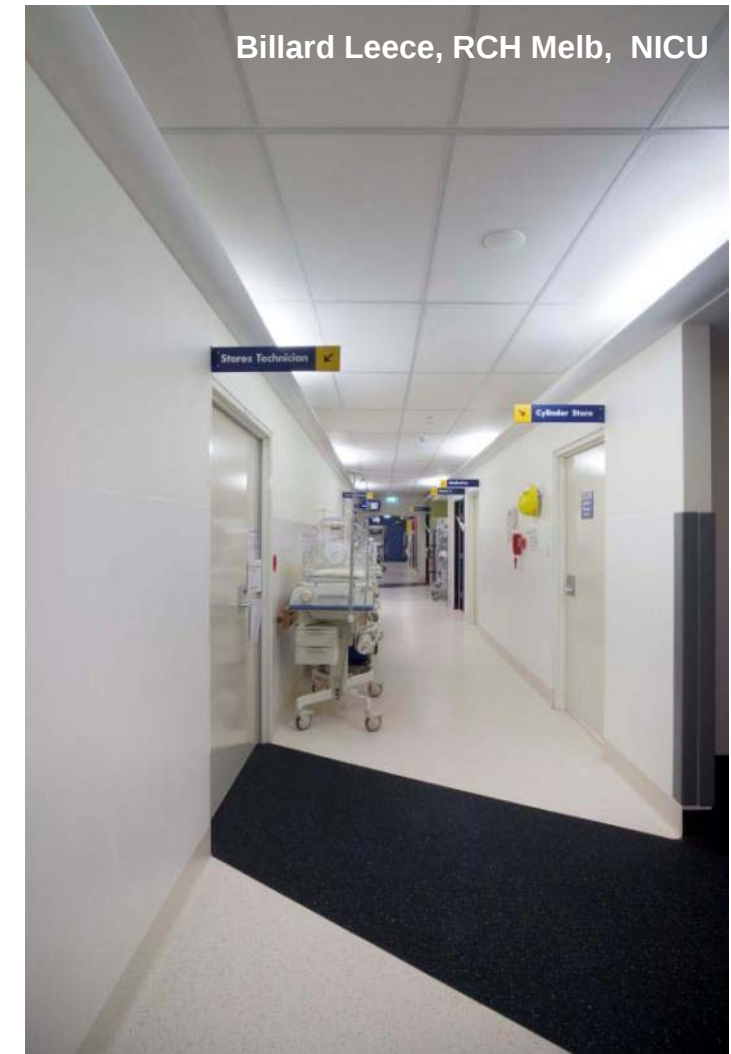
- Legislative and accreditation obligations
- Key element in the operation and design of healthcare facilities -State Health Dept policies
- Floor finishes and environmental cleaning protocols - part of the overall facility infection control risk management strategy
- Infection Control Policies deal primarily with infection control management practices – relate to level of cleaning required

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9. INFECTION CONTROL (continued)

- Multi-purpose use and for outbreaks = cleaning standards for 'very high risk' (the highest level of intensity and frequency of cleaning)
- Standards Australia HB 260: Hospital acquired infections - Engineering down the risk - smooth, impervious, seamless surfaces for patient contact, or blood or body fluid spills
- Materials should be resistant to disinfectants
- Australasian HFG, Part D, Infection Control - general coverage and comparison between NSW/Vic categories for Isolation room and those in SAA HB 260.





10. COLOUR AND PATTERN

- Use of colour, pattern and texture for practical purposes
- Maintain appearance and improve service life by reducing the unwanted effects of staining and marking
- Provide an interior environment to assist - healing, stress reduction
- Create designs that identify, unify or separate spaces, and add aesthetic and functional value
- Wayfinding device for general /specific user profiles - patients with dementia



10. COLOUR AND PATTERN (continued)

- Colour, pattern selection appropriate for area use - patient bedroom area, operating room
- Inappropriate patterning and floor patterns = a risk for some users - disorientation, dizziness or impeding movement
- Adverse affect on intended outcomes or occupant tolerance = early replacement
- Successful use of colour and pattern is a design skill – specialists with healthcare experience - collaboration with appropriate healthcare staff
- Unsuccessful design or selection = costly and disruptive replacement

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Scrubs Wet Floor.wmv



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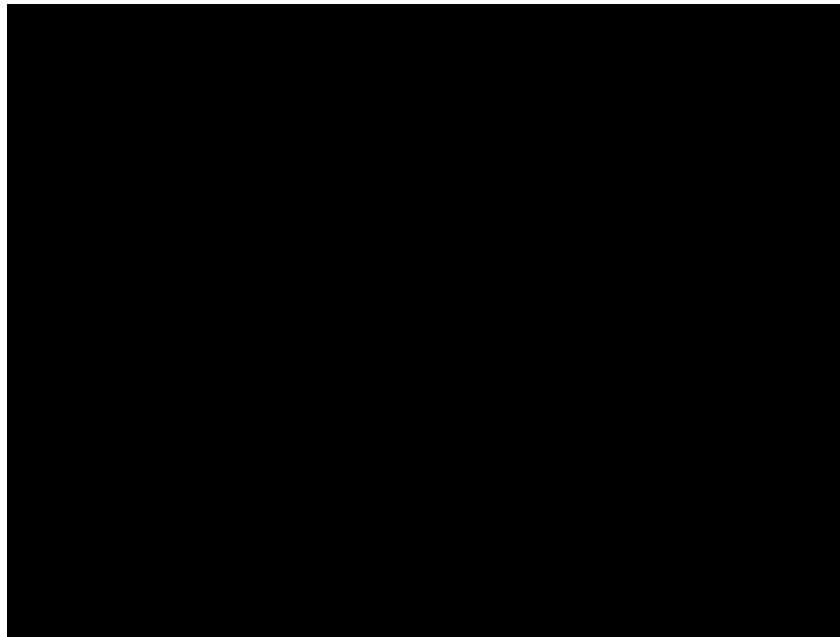
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11. CONCLUSION

Thanks to NSW Health and to Polyflor!



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