# How flooring design contributes to healthy supportive aged-care environments

'Safety isn't expensive, it's priceless" - Anon Aged Care NZ Issue 01 2022

Slips and falls lead to thousands of injuries in New Zealand every year, with flooring surfaces playing a major part in many of these incidents. Assessing the risks and choosing flooring products that are slip-resistant and suitable for each application is therefore paramount for the designer and management team as it ensures the safety of users and a reduction to the risk level and likelihood of litigation.

When it comes to choosing products to be part of an aged care facility, the right products ensure a better, safer and cleaner environment for all who utilise the facility.

Flooring contributes to the design of healthcare facilities in a multitude of ways, contributing aesthetically to the overall look and feel of a facility, providing comfort for patients and staff, and working as a way-finding tool to designate areas.

At the same time, the flooring palette has to take into account the demands of each space.

The best way to approach these design areas is to decide on a style, such as a clinical or relaxed environment, and research colour trends and how colours affect emotion especially within mental health.



Designers need to consider the lifestyle, the overall feel required in the project, research products that are fit for purpose and that will provide sustainable slip resistance where required, the abrasion level of the flooring and wear layers, the ease of cleaning and ongoing cleaning and maintenance costs.

Ultimately a product is usually selected based on whether it is 'fit for purpose' or not. Surfaces with a raised profile or heavy texturing, for example, should not be used in areas where wheeled traffic is expected, but it is recommended for floor safety in areas such as central kitchens and wet areas.

From floors that stand up to frequent spills, to an option that is adhesive-free, flooring products should be thoroughly tested to ensure that they meet the needs of different spaces in a healthcare or aged care project.

#### **Slips and trips**

Slips occur when a person's foot lose traction with the ground surface due to wearing inappropriate footwear or when walking on slippery floor surfaces such as those that are highly polished, wet or greasy.

Trips occur when a person unexpectedly catches their foot on an object or surface. In most cases people trip on low obstacles that are not easily noticed such as uneven edges in flooring, loose mats, opened drawers, untidy tools or cables from electrical equipment.

Falls can result from a slip or trip but many also occur during falls from low heights such as steps, stairs and curbs or from an uneven surface in the flooring.

# Selecting control measures - design of facilities

The best way to eliminate slips and trips is to build and design facilities with safety in mind.

The following should be considered during the floor design stage:

- minimise any changes to the floor level. If levels must change, use ramps rather than steps when connecting pedestrian pathways
- ensure the maximum ramp slope does not exceed 1:12.
- use slip resistant floor tiles.
- avoid sudden transitions in floor surface texture if possible. If such transitions occur, ensure good lighting and individual cues highlight the change.

# The role of PCBUs

PCBUs must manage the health and safety risks associated with slips and trips by eliminating the risk so far as is reasonably practicable, and if that is not reasonably practicable, minimising the risk so far as is reasonably practicable.

This involves a systematic approach to:

- identify hazards
- if necessary, assess the risk associated with these hazards
- implement and maintain risk control measure
- review risk control measures



There are various ways to control the risk of slips and trips, listed below in order of their effectiveness (known as the hierarchy of control).

Hierarchy of control	Examples
Eliminate the hazard	Remove slip and trip hazards at the design stage such as eliminating changes in floor levels and installing more power outlets to avoid trailing cords.
Substitution	Replace flooring with a more slip resistant surface.
Isolation	Prevent access to high-risk areas, for example, cordon off wet floor areas while cleaning is in progress.
Engineering controls (redesign)	<ul> <li>apply floor treatments to increase slip resistance</li> <li>improve lighting</li> <li>stop leaks from equipment or pipes</li> <li>provide adequate drainage</li> <li>clearly mark edges of steps and any changes in floor height</li> </ul>
Administrative controls	<ul> <li>implement good housekeeping practices including keeping access ways clear and cleaning up spills immediately.</li> <li>use signage to warn of wet or slippery areas</li> <li>provide training and supervision</li> </ul>

More than one control measure may be needed to provide the best protection.

# Identifying slip and trip hazards

Common slip hazards include:

- spills of liquid or solid material
- wet cleaning methods
- wind driven rain or snow through doorways
- a sudden change in floor surface, for example, joins between carpet and polished timber
- change from wet to dry surface
- dusty and sandy surfaces
- the incline of a ramp
- loose or bumpy flooring
- low light levels
- use of unsuitable footwear

Common trip hazards include:

- ridges in floors or carpets
- worn floor coverings
- potholes and cracks in floors
- changes in floor level
- thresholds and doorsteps
- floor sockets and phone jacks
- cables from power extension units
- loads that obstruct vision
- obstacles in traffic areas

# Controlling the risks of slipping

Floor treatments that improve slip resistance are those that increase the surface roughness of the flooring. The main floor treatments are sand blasting or grinding, chemical etching, coating with resins and using floor mats or adhesive anti-slip strips.

Examples of different floor types that may be suitable in an aged care setting include:

Floor type	Characteristics
Terrazzo	Gives good appearance and wears well but can be slippery when wet, when excess polish is used or when dusty.
Quarry tiles, matt ceramic tiles	Low water absorption and good resistance to chemicals. Slippery in wet conditions if smooth but can be moulded with aggregate or profiles to improve slip resistance.
Vinyl tiles and sheet	Easy to clean. Use sheet form where frequent washing is required to avoid water getting under the tiles. Slippery when wet particularly if polished, however slip resistant vinyls are available. These have aggregates moulded in. Thicker and softer vinyls are more slip resistant than hard ones.
Cork	Must be sealed to prevent absorption of all and water but may then be slippery when wet.
Plastic matting	Interlocking PVC extrusions give good drainage and slip resistance.
Carpet	Carpet has a shorter life than hard floor surfaces, but it can be a cost- effective solution. Installations should be wall to wall, to avoid the hazard of trip on edges. When used in small local areas, such as at entrances.

In addition to ensuring the best flooring options, when selecting and purchasing footwear – both for residents and staff – consider whether it has good slip resistant properties, in addition to any other required safety features. For example:

- in wet conditions the shoe sole tread pattern should be deep enough to help penetrate the surface water and make direct contact with the floor.
- In dry conditions the shoe sole tread patter should be flat bottom construction which grips the floor with maximum contact area, and
- Urethane and rubber soles are more effective than vinyl and leather soles for slip resistance. Sole materials that exhibit tiny cell like features will provide the added benefit of slip resistance.

Carers and staff in aged care environments, both at aged care facilities and in homecare situations, owe a duty of care to the individuals under their care. This means that choosing a safe flooring solution is an important consideration when designing a building in aged care environments.

When it comes to choosing products to be part of a hospital facility or an aged care facility, the right products are going to ensure a better, safer and cleaner environment for all who utilise the facility.