Design and Technology and the person with dementia

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Types of Dementia

- Alzheimer’s
- Vascular (Multi-Infarct)
- Lewy Body’s
- CJD
- Alcohol Related Frontal Lobe Dementia e.g. Pick's
Statistics

• 59,8970 people with dementia in Scotland in 2005 - Rising to 66,000 in 2011
• 104,741 by 2040
• 1% of people at 65 ^ 5% per 5 years
• 1 in 3 people in their 90s
‘The experience of dementia is characterised by both the experience of loss (of social roles and relationships as well as of neurological functioning) and the threat of further losses to come and result in a range of emotions including grief, depression, anxiety, despair and terror’.

‘The experience of dementia therefore represents a profound threat to the individual’s identity- to their sense of who they are’

Cheston and Bender 1999
Symptoms of Dementia

• Impairment of Recent Memory – Later all memory
• Disorientation
• Poor Concentration
• Difficulty in Naming and using language
• Impaired ability to learn, or recall learnt information
• Difficulty in co-ordination and motor skills
• Difficulty with thinking, understanding or following a sequence
• Personality and mood changes, decline in judgement and standards
“the disabilities that people experience are a result of the relationship between what’s happening in the brain and their social and built environment.”
**Vision**
- Acuity – 75% of people over the age of 70 have problems
- Reduction in the visual field
- Light Adaptation – double the level of illumination
- Colour - Contrast + Range
- Height
- Eye Muscle

**Hearing**
- Clutter
- Discomfort
- Auditory Distraction

**Mobility**
- Dangerous Velocity
- Crowd Shear
- Sensation in Feet
Typical Design

Figure 1

- One long straight corridor
- Contains 24 doors of the same design and colour
- Carpet one continuous colour running between both flats
- Wall colour, the same in both flats

Small Hall area
Environmental Barriers

- Physical Disability
- Dementia

Excess Disabilities
The consensus on design features

- Small size
- Familiar, domestic, homely in style
- Plenty of scope for ordinary everyday activities
- Unobtrusive concern for safety
- Different rooms for different functions
- Age appropriate furniture and fittings
- Safe outside space

- Single rooms big enough for lots of personal belongings
- Good signage and multiple clues for sight, smell, sound etc
- Use of objects rather than colour for orientation
- Enhancement of visual access
- Controlled stimuli, especially noise

Professor Mary Marshall
Outside Environment

Violent Episodes decreased
Orientation to day and season

Depression and Dementia

Bedrooms
Sitting
Dining and Kitchen

Isolated Utilities

Garden

Total Visual Access

YY Shaped Wing of the Meadows (Hammond Care)
People with dementia can misinterpret aspects of their environment if they are not clear, eg:

– see reflections on the floor as pools of water
– see changes of floor finish as steps
– see shadows as objects
– be more prone to falls
Age related eye diseases:

- Glaucoma
- Visual field loss due to stroke (CVA)
Age related eye diseases:

Cataracts

Macular Degeneration
Effective lighting

• Increase light levels
  – Between 2 to 3 times normal standards
  – Use surfaces with high diffusive reflectance
  – Use local lighting at key task areas

• Provide good contrasts
• Minimise glare
• Avoid sudden changes in levels
• Improve colour rendition
Designing for impaired memory

- Recognisable /familiar is a key principle
- Visibility
- Preserving identity / stimulating memory
Designing for impaired learning

- Make crucial information obvious
- Conceal the unnecessary
- Offer multiple cues
Designing for impaired reasoning

- Make sure people get as much information as possible
- Compensate for loss of depth perception
- Give lots of cues
# Creating a Design Framework

<table>
<thead>
<tr>
<th>Code</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Essential</td>
<td>The design features in this category are essential criteria, based on research and expert opinion. 100% of the criteria in this category must be met to be registered with the DSDC as a dementia friendly setting.</td>
</tr>
<tr>
<td>2</td>
<td>Recommended</td>
<td>The design features in this category are recommended for environments to be used by people with dementia, based on current literature and international best practice. At least 30% of the criteria in this category must be met to be registered with the DSDC as a dementia friendly setting.</td>
</tr>
<tr>
<td>3</td>
<td>Desirable</td>
<td>The design features in this category are desirable for environments to be used by people with dementia, based on current literature and international best practice. Criteria met in this category enhance the rating of the setting as a dementia friendly setting.</td>
</tr>
</tbody>
</table>
Dementia and Technology
Communicating - Technology Descriptors

- **Assistive Technology**
  
  “Any item, piece of equipment…..that is used to increase, maintain or improve functional capabilities of individuals with cognitive, physical or communication disabilities” (Marshall 2000)

- **Data Collection/Monitoring Technology/ Tagging**

  *Electronic equipment to gather data on physical or mental wellbeing, identify location, or the behavioural patterns and/or activities of an individual*

- **Information and communication technologies**
These range from single stand alone devices to networked systems.
To Remind the Person

- Clocks
- Pager reminders for example to take medication
- Devices which provide a small screen by the front door which lights with a reminder message
To Assess the needs of the person

To understand the persons behaviour

- To monitor
- Facial Recognition technology to identify distress
- Opening of the Fridge
Environment Management

- Activate bathroom light
- Locks on doors – Keypads
- Flood prevention
## Monitoring

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Social</th>
<th>Personal</th>
<th>Medical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoke</td>
<td>‘Wandering’</td>
<td>Incontinence</td>
<td>Cardiac arrhythmia</td>
</tr>
<tr>
<td>Heat</td>
<td>Fall</td>
<td>Lying position</td>
<td>Hypoglycaemia</td>
</tr>
<tr>
<td>Flood</td>
<td>Bed absence</td>
<td>Medication alert</td>
<td>Epileptic seizure</td>
</tr>
<tr>
<td>Methane</td>
<td>Use of fridge</td>
<td>Weight loss</td>
<td>Asthma attack</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>Lack of movement</td>
<td>Bath/shower monitor</td>
<td>Fever</td>
</tr>
<tr>
<td>Noise</td>
<td>Intruders</td>
<td>Medical monitoring</td>
<td></td>
</tr>
</tbody>
</table>

Air quality | Appliance misuse |

Miskelley 2004

http://ntec.org.uk/gm2.doc
Ethics

• Dentological theories - interventions should be considering in relation to pre-existing duty-based requirements within the given scenario.

• Consequentialist theories - the consequences of the action should assist with decision making.
‘Wandering’ is a Serious Issue

- 25% of people who ‘wander’ experience serious or fatal injury (Rader, 1987)

- 40% of people with dementia get lost at some point - 5% of people with dementia get lost repeatedly (McShane et al., 1998)
Legislative Background
Scotland

- Adults with Incapacity (Scotland) Act 2000
- Human Rights Act 1998
- Mental Health (Scotland) Act 1984 – Revised act due November 2005
- Regulation of Care (Scotland) Act 2001
Mental Welfare Commission (MWC) for Scotland

“In its broadest sense, restraint is taking place when the planned or unplanned, conscious or unconscious actions of care staff prevent a resident or patient from doing what he or she wishes to do and as a result is placing limits on his or her freedom.”

MWC Scotland

“Risks, rights and limits to freedom” – 2002
Use of Technology

Key Principals

- Cannot otherwise be achieved
- Least Restrictive option
- Accounts for present and past wishes
- Takes other peoples views into account
- Encourages the person to use skills

Mental Welfare Commission Scotland – 2004

www.mwcscot.org.uk
Ethical Practice

• **Perspectives** – consider views

• **Principles:**
  – Autonomy
  – Beneficence (doings ones best for the person)
  – Non-maleficence (not harming the person)
  – Justice

• **Paradigms**

  Marshall – Astrid guide 2000
Ethical Protocol

- What is the problem and for whom?
- What action has been tried to resolve the problem?
- Is technology being considered?
- What are the alternatives to technology?
- What technology is to be used
- When will it be reviewed
- By whom will it be reviewed?
The Stages Before Using Technology

- Consult with appropriate organisations and individuals
- Develop Policies and Procedures
- Development of Documentation
- Part of care planning and consent process
- Prepare the Organisation
- Training and supervision for staff
Technology can inform and enhance care for people with dementia if used appropriately.

The point at which to introduce a technology may be short – support services need to ensure that choice is available.
References

• Martin S, Cunningham C, Nugent C, 2007 Ethical considerations for integrating technology into community based service models for adults with Dementia, Alzheimer’s Care Quarterly (June)
