Best Evidence Summaries of Topics in Mental Healthcare

BEST *in* MH *clinical question-answering service*

Question

For people with dementia, what features and specifications of the physical ward environment are most beneficial to all patient outcomes?

Clarification of question using *PICO* structure

Patients: People with dementia
Intervention: Features and specifications of the physical ward environment
Comparator: Other features and specifications of the physical ward environment
Outcome: All patient outcomes

Clinical and research implications

No clinical implications can be made from the available evidence. The authors of a systematic review suggested that more high-quality studies are needed to assess the effectiveness of the built environment on managing behavioural and psychological symptoms of dementia.

What does the evidence say?

Number of included studies/reviews (number of participants)

One systematic review (SR) met the inclusion criteria for this BEST summary (Soril et al. 2014).

Main findings

The SR aimed to assess the effectiveness of built environment interventions, compared with usual care or no intervention, in the management of behavioural and psychological symptoms of dementia (BPSD) among residents in long-term care settings. The search was conducted in June, 2013. The SR authors identified 5 'non-randomised comparative cohort studies' - two of which evaluated change or redesign of existing physical structures or spaces, one that evaluated the impact of adding physical objects or spaces to the existing environment, and two that evaluated the impact of moving residents with dementia into specialised dementia care units/facilities. The authors of the SR reported that only two of the five studies demonstrated improvements in the frequency and/or severity of behavioural and psychological symptoms of dementia. This included one pre-post study that found that unlocking doors to a common courtyard of a specialised care facility led to decreased agitation in residents with dementia, compared with keeping the doors locked. The other study found that relocation of a small sample of 16 residents from a traditional care unit to a specialised dementia care unit within a single long-term care facility resulted in decreased agitation amongst participants, specifically in verbally aggressive behaviour. None of the studies reported worsening of symptoms. No data or statistical results were presented in the SR, so that further detailed information on the results, including size of effects, was not possible to report in this summary.

Authors' conclusions

The authors concluded that 'the range of built environments is broad, as is the complex and multi-dimensional nature of BPSD. There is inconclusive evidence to suggest a built environment intervention which is clinically superior in long-term care settings'.

Reliability of conclusions/Strength of evidence

The included SR was well-conducted in terms of specifying clear inclusion criteria, conducting a thorough search of the literature, and minimising reviewer bias. In addition, all the studies were subjected to a quality assessment using published criteria. The results of the studies were, however, not reported in detail; no data or statistical results were presented, and it is not clear if the results were clinically meaningful. Given the lack of robust studies, the authors' cautious conclusion (i.e. that there is inconclusive evidence) appear to reflect the evidence.

What do guidelines say?

Neither National Institute for Health and Care Excellence (NICE) nor Searching of Scottish Intercollegiate Guidelines Network (SIGN) guidelines commented on the most beneficial features and specifications of the physical ward environment for people with dementia.

Date question received: 11/03/2015
Date searches conducted: 24/03/2015
Date answer completed: 09/04/2015

References

Systematic reviews

Soril, L., Leggett, L., Lorenzetti, D., Silvius, J., Robertson, D., Mansell, L., Holroyd-Leduc, J., Noseworthy, T.,& Clement, F. (2014) Effective Use of the Built Environment to Manage Behavioural and Psychological Symptoms of Dementia: A Systematic Review. *PLoS One, 9(12),* 1-12.

Results

Systematic reviews

Author (year)	Search date	Inclusion criteria	Number of included studies	Summary of results	Risk of bias
Soril et al. (2014)	03/2015	*Participants*: Residents of long-term or specialised dementia care units with dementia and behavioural and psychological symptoms of dementia. *Intervention*: Interventions to the build environment of long-term or specialised dementia care units, classified in three groups (by the review authors): (i) a change or reduction of existing physical structures or spaces to the existing environment (two studies) (ii) the addition of physical objects or spaces to the existing environment (one study); (iii) the relocation of the study population to a novel living environment (two studies). *Comparator*: Pre-intervention outcomes (four studies); Control group sampled from two separate long-term care facilities (one study). *Outcome*: Study 1: Resident behaviour; Study 2: Agitation and behaviour; Study 3: Affect, pleasure, anger, anxiety, fear, sadness, interest, contentment; Study 4: Quality of life, agitation; activities of daily living, interest in environment,	5 (4 studies were described as pre-post studies, and one was a non-randomised controlled trial)	The authors reported that the included studies were of low to moderate quality. **Change or redesign of existing physical structures or spaces:** One pre-post study (n= 44) found that unlocking doors to a common courtyard of a specialised care facility led to decreased agitation in residents with dementia, compared to keeping the doors locked (no data or statistical results were reported). Another study (n=100) reported no significant difference in resident behaviour 3 months after a corridor (within a large psychiatric hospital) had a large-scale redesign (no data or statistical results were reported). **Addition of physical objects or spaces to the existing environment:** One study examined the impact of two different multisensory environments: a Snoezelen	High

| | | social withdrawal, depression, concentration, memory; Study 5: Agitation behaviour, including physical aggression and verbal aggression. *Study design*: Systematic review of non-randomized comparative cohort studies published between 1992 and 2010. | | room and a landscaped garden (added to a long-term care facility), compared with a control living room setting (n=48). The authors of this study reported no significant differences between the three environment for pleasure, anger, anxiety/fear, interest, or contentment. They did, however, find that there was significantly more sadness in residents exposed to the living room environment compared to those exposed to either of the interventions (no data or statistical results were presented).

Relocation to a novel living environment: One study compared a purpose-built specialised dementia care facility with traditional long-term care facilities (n=185). After one year, there was greater sustained interest in the environment, less negative affect, and similar or improved overall quality of life in the intervention group compared to the control group. No significant differences between groups were observed for concentration, orientation, socially appropriate behaviour, or social withdrawal (no data or statistical results were presented). Another study reported | |

				that relocation of a small sample of 16 residents from a traditional care unit to a specialised dementia care unit within a single long-term care facility resulted in decreased agitation amongst participants, specifically in verbally aggressive behaviour after 6 months (no data or statistical results were presented).	

Risk of bias

Systematic reviews

Author (year)	RISK OF BIAS				
	Inclusion criteria	**Searches**	**Review process**	**Quality assessment**	**Synthesis**
Soril et al. (2014)	☺	☺	☺	☺	☹

☺ Low risk   ☹ High risk   ? Unclear risk

Search details

Source	Search Strategy	Number of hits	Relevant evidence identified
SRs and Guidelines			
NICE	Dementia design	39	0
DARE	1 MeSH DESCRIPTOR Alzheimer Disease EXPLODE ALL TREES 320 Delete 2 MeSH DESCRIPTOR Dementia EXPLODE ALL TREES 648 Delete 3 MeSH DESCRIPTOR Dementia, Vascular EXPLODE ALL TREES 21 Delete 4 MeSH DESCRIPTOR Frontotemporal Dementia EXPLODE ALL TREES 3 Delete 5 MeSH DESCRIPTOR Lewy Body Disease EXPLODE ALL TREES 6 Delete 6 (dement*) IN DARE 609 Delete 7 (alzheimer*) IN DARE 386 Delete 8 (lewy* adj2 bod*) IN DARE 17 Delete 9 (deliri*) IN DARE 106 Delete 10 (chronic adj2 cerebrovascular) IN DARE 3 Delete 11 (organic brain disease) IN DARE 2 Delete 12 (organic brain syndrome) IN DARE 8 Delete 13 (normal pressure hydrocephalus) IN DARE 6 Delete 14 (shunt*) IN DARE 107 Delete 15 #13 AND #14 5 Delete 16 (benign senescent forgetfulness) IN DARE 0 Delete 17 (cerebr* adj2 deteriorat*) IN DARE 0 Delete 18 (cerebral* adj2 insufficient*) IN DARE 0 Delete 19 (pick* adj2 disease) IN DARE 1 Delete 20 (creutzfeldt or jcd or cjd) IN DARE 3 Delete 21 (huntington*) IN DARE 14 Delete 22 (binswanger*) IN DARE 1 Delete	82	1

	23 (korsako*) IN DARE 5 Delete 24 #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 1090 Delete 25 MeSH DESCRIPTOR Facility Design and Construction EXPLODE ALL TREES 41 Delete 26 MeSH DESCRIPTOR Architectural Accessibility EXPLODE ALL TREES 3 Delete 27 MeSH DESCRIPTOR Health Facilities EXPLODE ALL TREES 2635 Delete 28 MeSH DESCRIPTOR Health Facility Environment EXPLODE ALL TREES 12 Delete 29 MeSH DESCRIPTOR Health Facility Planning EXPLODE ALL TREES 0 Delete 30 MeSH DESCRIPTOR Health Facility Size EXPLODE ALL TREES 53 Delete 31 MeSH DESCRIPTOR Skilled Nursing Facilities EXPLODE ALL TREES 11 Delete 32 MeSH DESCRIPTOR Hospital Design and Construction EXPLODE ALL TREES 13 Delete 33 (((Ward* adj3 environment) or (Ward* adj3 design*) or (Ward* adj3 redesign*) or (Ward* adj3 specification*) or (Hospital* adj3 environment) or (Hospital* adj3 design*) or (Hospital* adj3 redesign*) or (Hospital* adj3 specification*) or (Environment adj3 design*) or (Clinic adj3 environment) or (Clinic adj3 design*) or (Clinic adj3 redesign*) or (Clinic adj3 specification*))) IN DARE 31 Delete 34 (((Fitting* adj5 ward) or (Fitting* adj5 hospital) or (Fitting* adj5 clinic))) IN DARE 0 Delete 35 (((Fixture* adj5 ward) or (Fixture* adj5 hospital) or (Fixture* adj5 clinic))) IN DARE 0 Delete 36 (((Floor* adj5 ward) or (Floor* adj5 hospital) or (Floor* adj5 clinic))) IN DARE 0 Delete 37 (((Coat* adj5 ward) or (Coat* adj5 hospital) or (Coat* adj5 clinic))) IN DARE 1 Delete 38 (((Wall* adj5 ward) or (Wall* adj5 hospital) or (Wall* adj5 clinic))) IN DARE 1 Delete 39 (((Door* adj5 ward) or (Door* adj5 hospital) or (Door* adj5 clinic))) IN DARE 1 Delete 40 (((Window* adj5 ward) or (Window* adj5 hospital) or (Window* adj5 clinic))) IN DARE 0 Delete 41 (((Decorat* adj5 ward) or (Decorat* adj5 hospital) or (Decorat* adj5 clinic))) IN DARE 0 Delete 42 (((Colo?r* adj5 ward) or (Colo?r* adj5 hospital) or (Colo?r* adj5 clinic))) IN DARE 4 Delete 43 (((Light*adj5 ward) or (Light*adj5 hospital) or (Light* adj5 clinic))) IN DARE 0 Delete 44 (((Daylight*adj5 ward) or (Daylight*adj5 hospital) or (Daylight* adj5 clinic))) IN DARE 0 Delete 45 (((Glare adj5 ward) or (Glare adj5 hospital) or (Glare adj5 clinic))) IN DARE 0 Delete 46 (((Equip* adj5 ward) or (Equip* adj5 hospital) or (Equip* adj5 clinic))) IN DARE 5 Delete		

47 (((Furni* adj5 ward) or (Furni* adj5 hospital) or (Furni* adj5 clinic))) IN DARE 0 Delete

48 (((Applianc* adj5 ward) or (Applianc* adj5 hospital) or (Applianc* adj5 clinic))) IN DARE 0 Delete

49 (((Ergonomic* adj5 ward) or (Ergonomic* adj5 hospital) or (Ergonomic* adj5 clinic))) IN DARE 0 Delete

50 (((Sign* adj5 ward) or (Sign* adj5 hospital) or (Sign* adj5 clinic))) IN DARE 305 Delete

51 (((Device* adj5 ward) or (Device* adj5 hospital) or (Device* adj5 clinic))) IN DARE 2 Delete

52 (((Hazard* adj5 ward) or (Hazard* adj5 hospital) or (Hazard* adj5 clinic))) IN DARE 0 Delete

53 (((slip* adj5 ward) or (slip* adj5 hospital) or (slip* adj5 clinic))) IN DARE 0 Delete

54 (((Fall* adj5 ward) or (Fall* adj5 hospital) or (Fall* adj5 clinic))) IN DARE 15 Delete

55 (((Aid* adj5 ward) or (Aid* adj5 hospital) or (Aid* adj5 clinic))) IN DARE 4 Delete

56 (((Bath* adj5 ward) or (Bath* adj5 hospital) or (Bath* adj5 clinic))) IN DARE 0 Delete

57 (((Washroom* adj5 ward) or (Washroom* adj5 hospital) or (Washroom* adj5 clinic))) IN DARE 0 Delete

58 (((Restroom* adj5 ward) or (Restroom* adj5 hospital) or (Restroom* adj5 clinic))) IN DARE 0 Delete

59 (((Shower* adj5 ward) or (Shower*adj5 hospital) or (Shower*adj5 clinic))) IN DARE 0 Delete

60 (((Cubicle* adj5 ward) or (Cubicle* adj5 hospital) or (Cubicle*adj5 clinic))) IN DARE 0 Delete

61 (((Rail* adj5 ward) or (Rail* adj5 hospital) or (Rail*adj5 clinic))) IN DARE 1 Delete

62 ((((Handrail* adj5 ward) or (Handrail* adj5 hospital) or (Handrail*adj5 clinic)))) IN DARE 0 Delete

63 ((((Bed?rail* adj5 ward) or (Bed?rail* adj5 hospital) or (Bed*rail*adj5 clinic)))) IN DARE 0 Delete

64 ((((Kitchen* adj5 ward) or (Kitchen* adj5 hospital) or (Kitchen*adj5 clinic)))) IN DARE 0 Delete

65 ((((Bed adj5 ward) or (Bed adj5 hospital) or (Bed adj5 clinic)))) IN DARE 14 Delete

66 ((((Bedroom* adj5 ward) or (Bedroom* adj5 hospital) or (Bedroom* adj5 clinic)))) IN DARE 0 Delete

67 ((((Entrance*adj5 ward) or (Entrance* adj5 hospital) or (Entrance* adj5 clinic)))) IN DARE 0 Delete

68 ((((Exit adj5 ward) or (Exit adj5 hospital) or (Exit adj5 clinic)))) IN DARE 1 Delete

69 ((((Grounds adj5 ward) or (Grounds adj5 hospital) or (Grounds adj5 clinic)))) IN DARE 0 Delete

70 ((((Garden* adj5 ward) or (Garden* adj5 hospital) or (Garden* adj5 clinic)))) IN DARE 0 Delete

71 ((((Allotment* adj5 ward) or (Allotment* adj5 hospital) or (Allotment* adj5 clinic)))) IN DARE 0 Delete

72 ((((Yard adj5 ward) or (Yard adj5 hospital) or (Yard adj5 clinic)))) IN DARE 0 Delete

73 #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43 OR #44 OR #45 OR #46 OR #47 OR #48 OR #49 OR #50 OR #51 OR #52 OR #53 OR #54 OR #55 OR #56 OR #57 OR #58 OR #59 OR #60 OR #61 OR #62 OR #63 OR

	#64 OR #65 OR #66 OR #67 OR #68 OR #69 OR #70 OR #71 OR #72 2968 Delete		
	74 #24 AND #73 82 Delete		
Primary studies			
PsycINFO	1. PsycInfo; exp DEMENTIA/; 25971 results.	214	0
	3. PsycInfo; exp ALZHEIMER'S DISEASE/; 34298 results.		
	4. PsycInfo; 1 OR 3; 53168 results.		
	5. PsycInfo; INTERIOR DESIGN/ OR BUILT ENVIRONMENT/; 927 results.		
	6. PsycInfo; "physical ward environment*".ti,ab; 2 results.		
	7. PsycInfo; "physical environment".ti,ab; 2626 results.		
	8. PsycInfo; specification*.ti,ab; 7568 results.		
	9. PsycInfo; 5 OR 6 OR 7 OR 8; 11060 results.		
	10. PsycInfo; 4 AND 9; 135 results.		
	11. PsycInfo; FACILITY ENVIRONMENT/; 702 results.		
	12. PsycInfo; ENVIRONMENTAL PLANNING/ OR PERSON ENVIRONMENT FIT/; 2654 results.		
	13. PsycInfo; 9 OR 11 OR 12; 14153 results.		
	14. PsycInfo; 4 AND 13; 214 results.		
	_____		
Cinahl	33. CINAHL; exp DEMENTIA/; 35943 results.	339	0
	34. CINAHL; exp ALZHEIMER'S DISEASE/; 15123 results.		
	35. CINAHL; 33 OR 34; 35943 results.		
	36. CINAHL; INTERIOR DESIGN/ OR BUILT ENVIRONMENT/; 0 results.		
	37. CINAHL; "physical ward environment*".ti,ab; 0 results.		
	38. CINAHL; "physical environment".ti,ab; 867 results.		
	39. CINAHL; specification*.ti,ab; 1477 results.		
	40. CINAHL; 36 OR 37 OR 38 OR 39; 2342 results.		
	41. CINAHL; 35 AND 40; 60 results.		
	42. CINAHL; FACILITY ENVIRONMENT/; 0 results.		
	43. CINAHL; ENVIRONMENTAL PLANNING/ OR PERSON ENVIRONMENT FIT/; 0 results.		
	44. CINAHL; 40 OR 42 OR 43; 2342 results.		
	45. CINAHL; 35 AND 44; 60 results.		

	46. CINAHL; NURSING HOME DESIGN AND CONSTRUCTION/ OR exp FACILITY DESIGN AND CONSTRUCTION/ OR exp INTERIOR DESIGN AND FURNISHINGS/; 8661 results. 48. CINAHL; 38 OR 39 OR 46; 10881 results. 49. CINAHL; 35 AND 48; 339 results.		
Medline	15. Medline; exp DEMENTIA/; 121377 results. 16. Medline; exp ALZHEIMER'S DISEASE/; 0 results. 17. Medline; 15 OR 16; 121377 results. 18. Medline; INTERIOR DESIGN/ OR BUILT ENVIRONMENT/; 0 results. 19. Medline; "physical ward environment*".ti,ab; 2 results. 20. Medline; "physical environment".ti,ab; 2424 results. 21. Medline; specification*.ti,ab; 25683 results. 22. Medline; 18 OR 19 OR 20 OR 21; 28104 results. 23. Medline; 17 AND 22; 123 results. 24. Medline; FACILITY ENVIRONMENT/; 0 results. 25. Medline; ENVIRONMENTAL PLANNING/ OR PERSON ENVIRONMENT FIT/; 0 results. 26. Medline; 22 OR 24 OR 25; 28104 results. 27. Medline; 17 AND 26; 123 results. 28. Medline; "built environment".ti,ab; 1170 results. 29. Medline; exp INTERIOR DESIGN AND FURNISHINGS/; 3982 results. 30. Medline; ENVIRONMENT DESIGN/; 3897 results. 31. Medline; 19 OR 20 OR 21 OR 28 OR 29 OR 30; 36364 results. 32. Medline; 15 AND 31; 276 results.	276	0
HMIC	50. HMIC; exp DEMENTIA/; 2529 results. 51. HMIC; exp ALZHEIMER'S DISEASE/; 552 results. 52. HMIC; 50 OR 51; 2529 results. 53. HMIC; INTERIOR DESIGN/ OR BUILT ENVIRONMENT/; 284 results. 54. HMIC; "physical ward environment*".ti,ab; 0 results. 55. HMIC; "physical environment".ti,ab; 272 results. 56. HMIC; specification*.ti,ab; 1697 results. 57. HMIC; 53 OR 54 OR 55 OR 56; 2243 results. 58. HMIC; 52 AND 57; 14 results. 59. HMIC; FACILITY ENVIRONMENT/; 0 results.	14	0

| | 60. HMIC; ENVIRONMENTAL PLANNING/ OR PERSON ENVIRONMENT FIT/; 44 results.
61. HMIC; 57 OR 59 OR 60; 2282 results.
62. HMIC; 52 AND 61; 14 results.
63. HMIC; NURSING HOME DESIGN AND CONSTRUCTION/ OR exp FACILITY DESIGN AND CONSTRUCTION/ OR exp INTERIOR DESIGN AND FURNISHINGS/; 0 results.
64. HMIC; 55 OR 56 OR 63; 1967 results.
65. HMIC; 52 AND 64; 9 results.
66. HMIC; 58 OR 62 OR 65; 14 results. | | |

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