Appendix 3: Charting

Framework Synthesis Levels 2 and 3: Work system subcategories and contextual domain headings	Framework Synthesis Level 1: Work Systems						
	PERSON	TASK	TOOLS & TECHNOLOGY	ENVIRONMENT	ORGANISATION	OTHER	TOTAL % (n=33 papers)
Research Load: Compatibility with care routines		27					81.8
Research Load: Time/Resources required		25					75.8
Care Staff: Motivation & attitude to change	24						72.7
Research load: Collaborative approach		24					72.7
Staff Workload: Existing pressures		23					69.7
Resources: Staff turnover					23		69.7
Management Culture: Supportive of intervention					22		66.7
Care Staff: Knowledge and skills	20						60.6
Research Load: Complexity of implementation		20					60.6
Resources: Lack of resources					20		60.6
Management Culture: Flow of information					20		60.6
Communication Devices: Availability & accessibility			18				54.5
Managers: Support for the project	17						51.5
Management Culture: Receptivity to change					16		48.5
Management Culture: Hierarchies					15		45.5
Care Staff: Team cohesiveness	14						42.4
External Environment: Policy and cultural climate				14			42.4
Research Team: Experience and rapport						14	42.4
Residents: Health status	13						39.4
Management Culture: Inclusive involvement					12		36.4
Research Load: Flexibility of the process		11					33.3
Study Design Factors: Methods						11	33.3
Residents & Families: Engagement	10						30.3
Care Home Managers: Knowledge and skills	9						27.3
External Environment:External support				9			27.3
Internal Environment: Physical space				9			27.3
Data Records: Quality & format			8				24.2
Resources: Care home size and ownership					6		18.2

Figure A3.1 Context domains presented according to care home work system and ranked according to reporting frequency across the 33 included papers.

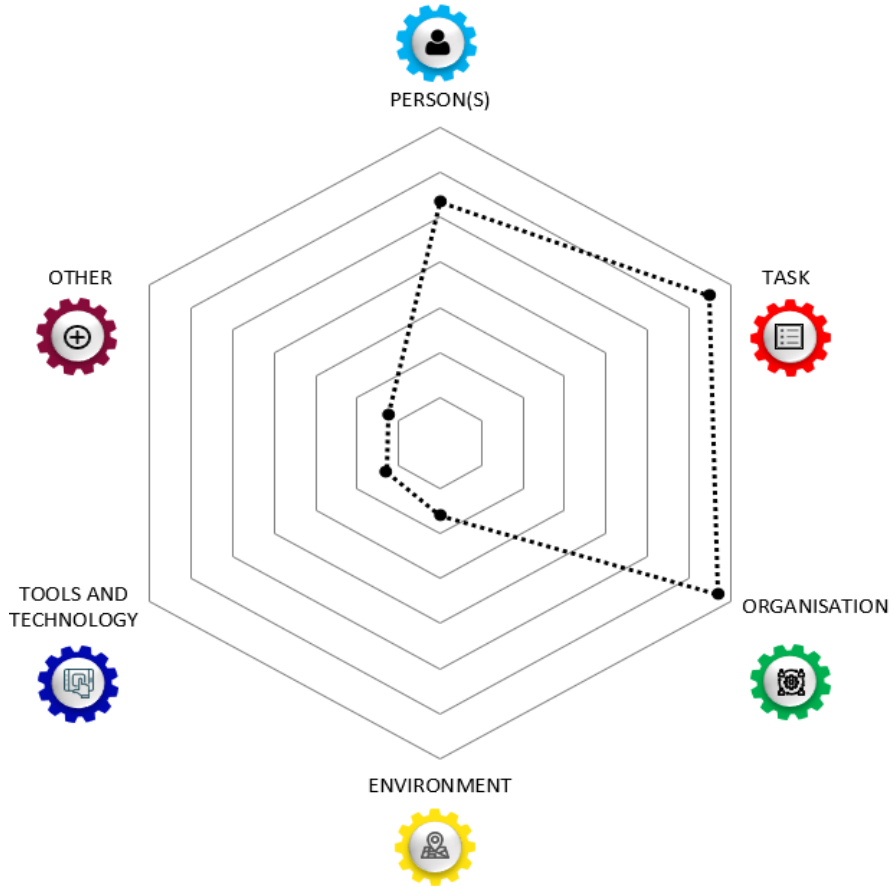

Figure A3.2. Radar plot displaying the weighting of reported contextual factors influencing trial implementation processes in CHs across work systems.

Descriptive Summary of the Work-System Sub-categories

Organisation

Sub-categories of the organisation work system included *resources*, and *management culture*. Contextual factors indexed within the organisational work system were the most prevalent across all 28 contextual domains. The data demonstrated that CH organisational factors have a strong mediating effect on research implementation. "*Care homes are recognized to be highly variable in terms of their organizational structure and this has been identified as a challenge to research.*" (p.979)[1] Not only did attributes of the organisation lend themselves to their state of readiness to host a research study but they also determined whether the organisation was poised to accept and adopt changes to habitual routines. The effects of staffing stability, the management culture, adequate allocation of resources, the influence of internal hierarchies, and the quality of communication within and across teams were all influential factors on successful research

implementation. There was a need for, "*vertically and horizontally linked teams (involving professional and nonregulated staff from various departments) to identify, instigate, own, and monitor a change process. This precipitated two change mechanisms: managerial support and a disruptive innovation."* (p.365)[2]

"Organizational aspects influenced the ease with which the care program was embraced in.. [Dementia Special Care Units]. Staff turnover, high workload, concurrent projects, cancelled meetings and organizational changes were described as barriers for implementing the care program." (p.9)[3]

Task

The task work system was the second highest in terms of prevalence of contextual factors in the included literature. Sub-categories of the task work system were *research load*, and *staff workload*. They represented four out of the top six context domains: congruence of research activities with routine care, the roll of collaboration in supporting research tasks, perceived complexity of the implementation process, and the time and resources the intervention required. Novel research activities were not prioritized in many situations because, "*the new routines were seldom accompanied by suggestions as to what routines should be replaced."* (p.90)[4] The additional 'load' that staff experienced required extra effort for which their appeared few rewards, unless the benefit to residents' was clear over the short term. One internal facilitator reported, "…*after the residential, I was exhausted. For five days I just sat there, demolished, and like 'where do I start'."* (p.6)[5]

Person(s)

The person work system was the third most prevalent across the indexed data. Sub-categories within the person work system were *care staff, managerial team*, and *residents and family*. The perceived benefit of the intervention, confidence levels of staff, the amount of support from the CH management, and the health status of residents all had significant influences on protocol compliance and implementation success. These factors contributed to dwindling engagement and a loss of momentum of research focussed activities over time. "*Mappers were also required to use skills they had not previously had to employ, such as engaging colleagues in discussion of practice development issues and accurate written recording of outcomes*" (p.6).[6] When staff perceived negative elements of the intervention, it tended to spread throughout the organisation. "*There was a lot of negative feedback from the staff; they thought it was a stupid project."* (p.364)[2]

Environment

The environment work system had two sub-categories, *internal* and *external*. The internal physical environment was highly variable between CHs. Externally, economic constraints at a societal level affected retention of experienced staff and residents' health status when initially transferring to a CH. *"...the care is subject to huge cutbacks, so really good staff members leave because the quality becomes unacceptable. You then have to deal with less professional personnel, making it even more difficult to apply new methods like this one."* (*nurse assistant, p.542*)[7] These details introduced further heterogeneity between sites and influenced intervention feasibility, fidelity, and staff appraisals of appropriateness across individual CH settings. "*… the care home population is older and frailer than anticipated when the OPERA trial was planned, perhaps as a result of a prevailing ethical and financial imperative to maintain frail older people in their own homes with support for as long as possible*." (p.10)[8]

Tools and Technology

This work-system had sub-categories of *data records*, and *communication devices*. Approaches to record keeping and archiving were heterogeneous across CHs. These details were also influenced by the varying degrees of digital literacy among staff as well as the degree computers and wireless connections were available to staff. "*The relatively low response to some of the questionnaires is also an important limitation. One of the reasons for this is probably that the nursing home staff did not regularly use the e-mail account at work* (p.13).[9] Due to many staff having English as a second language remote teleconferences enabled inclusion but were also reported to inhibit understanding in some studies. Research teams experienced technological and communication challenges with CHs. "*Communication with the care home managers and mappers could be challenging and difficult to maintain for experts. A reliance on telephone and e-mail, meant experts had to call when the appropriate person was on shift and available, or e-mail. This latter method was often ineffective if mappers did not have work e-mail addresses or checked and answered them irregularly*." (p.8)[10]

Other

An additional work system was assigned to the synthesis framework that included *research team* and *trial factors* as sub-categories. Reasons for procedural drift were also attributed to aspects of the research process, "*the most commonly cited obstacle to coherence did not relate to care home characteristics, but to the procedures required for the cRCT [cluster randomised controlled trial] itself within the care homes: the lengthy gaps between first contacts, data collection, intervention*

activities and adjustments to the intervention all undermining coherence (p.9).[11] In addition relational qualities of the research team were important. For example," When *the relationship with the detailer was strong (Intervention Source), homes reported that the intervention had a high perceived value, exceeding their expectations. In contrast, the two homes who reported a negative perception of the detailer noted a lack of perceived value in the overall [Academic Detailing] intervention* (p9)."[12]

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