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Background

Health care practices unfold in concrete settings, which, themselves, are influenced by ongoing organizational agendas, diverse in origin and timeframes. To address how safety practices relate to the overall sense-making and articulation of work that take place in the

institution, the study approaches productive work that can be discerned in the situated practices of patient safety and quality health care. This includes such work pertaining also to patient safety, albeit, beyond the specific locality of action.

Objective

With the healthcare practitioners in focus, the study points to the significance of their clinical work, also into matters of learning and interplay

between professionals, work and, more broadly, projects of the organization.

Theoretical framework

For examining the refiguring effects of patient safety practices (Zuiderent-Jerak, et al. 2009; Pedersen 2017) the paper draws on the notion of "artful contamination" (Zuiderent-Jerak and Jensen 2009), to provide an analysis of how patient safety becomes *enmeshed* in the organizing of the institutional framework of a health care setting. From the relatively delimited contexts of the original engagement of safety practices, "artful contamination" allows also scrutiny to 'less visible', perhaps 'deleted', organizational configurations in which patient safety practices *continue to perform*.

The transformational, productive process of reciprocal influences in the contexts of the organization - both intended and otherwise - are hereby broached. "Artful contamination", invoking as a notion that of "artful integration" (Suchman 2002) related to design, lends in the analysis sensitivity to the accomplished yet always indeterminate, provisional character of professional work and tasks, including plans and projects in their undertaking. Thus, the analysis points to the practical significance of such translations in and for clinical practices.

Case Analysis 1: Neonatal milk kitchen

The handling of mothers' breast milk is a process that is undertaken up to 300 times a day at the case facility - a Mother-Child Care setting. Premature babies hospitalized there require feeding up to 12 times a day each, with both nurses as well as parents undertaking tasks entailed - the collection, storage, retrieval and other aspects of handling such breast milk. A completed analysis carried out by the Hospital, looking into the aggregate root-causes for reported adverse events in connection with the handling, had pointed to the possibility of making improvements through work of re-designing the interiors of refrigeration (and freezer) units in the

milk kitchens. It was deemed they were prone to inadvertent, switching of breast milk prior to use. (Simonsen and Beck, 2012) This problem-framing served as a backdrop for a collaborative project between the case facility and a team of design engineering university students and their supervisor, spanning five months. Generative design research methods were engaged, to help understand issues and possibilities *in situ*. First-hand ethnographic field work in the facility allowed gaining deep knowledge and taking stock of insight to the breast milk handling practices, and to leveraging toward co-designing activities with health care

professionals (see images below). The original scope and framing to re-design refrigeration units *per se*, were opened up through the collaboration to scrutinizing, but also leveraging, breast milk handling practices across the entirety of 'the journey' of the breast milk - the 'hands', the props, and situations, all which bear upon its handling. It broached more than what may reduced to patient safety in a clear-cut manner - and reframed the issue more conductively as manifold practices in many different situations of potential pertinence to quality in breast milk handling. Design materials issuing from this process allowed for actively



Above: A parent to an inpatient premature baby in the process of transferring the mother's breastmilk into an individualized receptacle for storage, and marking it for future identification before storing in the milk kitchen refrigerator.

Below: Image taken from one of the co-design sessions between hospital personnel and university project team with design engineering students - in generative design research and qualifying solutions.



engaging participants in hands-on co-design processes. Ethnographic research findings, reframing problem focus as well as opportunities toward improvement, were followed by ideation, and concept detailing, resulting in three distinct holistic proposals.

While the proposed solutions were

conceptualised as distinct project-undertakings, the case setting opted to subsequently reconfigure selected elements from *all three* proposals into *partial solutions* further borne through the organization with initiatives already carrying currency. Rather than a patient safety project *per se*

to reorganize handling of breast milk, elements from the collaboration were enmeshed in concurrent initiatives, with other organizational players, making them realizable. Patient safety thus affected, but also was influenced through, organizational initiatives in realizing the solutions.

Results

Our study points to the unfolding of 'patient safety' practices and their partial connections in making their relevance in manifold ways. Such an *irreductive* vantage point in addressing and working with patient safety allows for openness and flexibility to be leveraged, and in drawing on

distribution of safety work in other practices (Balatsas-Lekkas 2016). Intervening capacities of safety practices in their further enmeshment points to "artful contamination" (Zuiderent-Jerak and Jensen 2009) through which safety becomes a sustained, albeit less-pronounced aspect of

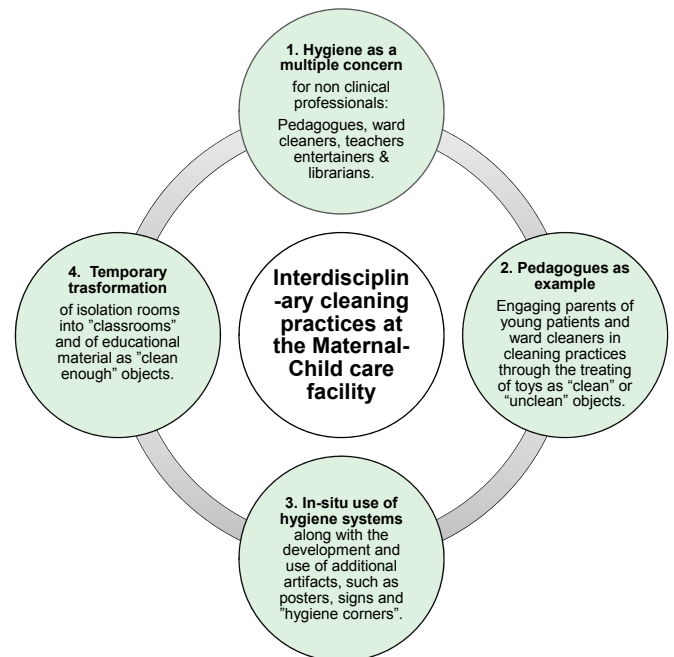
Methods

The paper takes a retrospective approach, ex post case analyses of projects conducted in collaboration with a Maternal-Child Care facility of a Danish hospital. The projects concern the prevention of adverse events:

- 1) in a neonatal milk kitchen; and
- 2) in indoor hospital playrooms, respectively.

Sensitizing concepts informed by *Science and Technology Studies (STS)* and *generative design research* are leveraged, towards exploring and making sense of relationships between the *in situ*, accomplished character of patient safety practices, vis-à-vis practices across the immediate sites of such action.

Case Analysis 2: Hygiene and play



1. Hygiene is a concern for various professionals involved in play and educational activities of young patients. While working within play areas and patient rooms, pedagogues, teachers, ward cleaners, librarians and entertainers are also concerned with the hygienic status of objects that relate to their professional practices, such as toys for the pedagogues and educational material for teachers. Moreover, non-clinical professionals develop tasks and processes for cleaning that allows them to accomplish the objectives of their professional role (e.g. play at playrooms requires the use of clean toys and the cleaning of used toys after play) while also use systems and participating to cleaning practices developed and implemented by the hospital's hygiene department.

2. Pedagogues ensure that within playrooms each toy is treated as a "clean" or "unclean" object. After used in individual or collective play activities, toys must be either "cleaned" or marked as "unclean" and stored as such, away from children's reach. For ensuring that the "clean"/"unclean" treatment of toys continues even in hours that playrooms function without the actual presence of pedagogues, the latter engage parents of young patients and ward cleaners in the identification, cleaning, storing and separation of "clean" and "unclean" toys. Pedagogues' continuous spotting and informing of parents of recently admitted young patients and of new ward cleaners about the treatment of hygiene concerns in playrooms allows them to "artfully integrate" new actors in hygiene maintenance.

3. Developed by the hygiene department of the hospital, a system of a green and a red plastic box for storing "clean" and "unclean" toys, respectively, is installed within each of the facility's playrooms. Aiming at the sustained use of the system by various playroom users (e.g. parents and cleaners), pedagogues have developed for and installed in each playroom additional artifacts. For example: A) signs that inform playroom's users (e.g. parents and relatives) that used toys entail hygiene-related risks, B) instructions for cleaning used toys with available materials, C) designated areas for toy cleaning, referred as "hygiene corners". The above suggest that the development and use of additional artifacts clarifies the purpose of the box system for each actor while also generates a shared cleaning practice that is enmeshed into the work of various professionals rather than to just safety experts.

4. With support from the hygiene department (e.g. wearing gowns, gloves and huts) while they also use a variety of hygiene-related artifacts (e.g. disinfection gel) and others (e.g. photocopied excerpts of educational books) for producing "clean enough" educational material for single use at the isolation rooms. Teaching and hygiene maintenance become enmeshed-but also achieved-through the mutual shaping of teaching and hygiene practices and, therefore the formation of an interdisciplinary safety practice.

Conclusion

The study shows the relevance of patient safety practices as sustained beyond the scope and framing of the immediacy of clinical practice. Through empirical synthesis, it shows how patient safety practices can be discerned as pertinent to diverse agendas of the organization.

References

- ✦ Balatsas-Lekkas, A. (2016). Assemblages of Patient Safety. Bringing together matters of concern between design and multiple knowledge practices in healthcare. Ph.D Thesis at the department of Management Engineering, Technical University of Denmark.
- ✦ Pedersen, K. Z. (2017). *Organizing Patient Safety*. London: Palgrave Macmillan.
- ✦ Simonsen, B. & Beck, S. A. (2012). Det gode mællekekken - indretning, der inviterer til rigtige arbejdsprocesser. *Symposiumsbogen - Rigshospitalets Sygeplejeforsamling*, juni 2012, p. 18-21.
- ✦ Suchman, L. (2002). Located accountabilities in technology production. *Scandinavian Journal of Information Systems*, 14(2): 91-105.
- ✦ Zuiderent-Jerak, T. & Jensen, B., C. (2009). Editorial introduction: Unpacking 'intervention' in Science and Technology Studies. *Science as Culture* 16(3): 227-235.
- ✦ Zuiderent-Jerak, T., Strating, M., Nieboer, A. and Bal, R. (2009). Sociological refigurings of patient safety: Ontologies of improvement and 'acting with' quality collaboratives in health care. *Social Science & Medicine* 69(9): 1713-21.

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