Evaluation of the Ward in the Erasmus Medical Centre

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Introduction

In the late 1990s, Erasmus University Medical Centre Rotterdam (Erasmus MC), faced with the renewal of its buildings on the present site, was given the opportunity to formulate and develop the model university medical centre of the 21st century. In this paper I will focus on a single aspect of this project: the concept of providing single patient rooms only in the new facility. At the time this was not only new for university medical centres in the Netherlands, but for general or acute hospitals as well.

How this concept was thought of, formulated, shared, enriched and questioned is described in this paper in chronologic order. The overall perspective of this narrative is that of a hospital planner working on the new Erasmus MC, but where possible it will be broadened to encompass other hospital projects in the Netherlands. This is why I have given this paper the title: "Introducing Single Patient Rooms in the Netherlands."

1999: the very start

The start of the Erasmus MC hospital renewal project in the late 1990s was the one time opportunity to formulate new strategic goals and thus requirements for a model university medical centre of the 21st century. We took this up by introducing the concept of the 'themed' hospital that become known as 'thinking differently': with existing and virtual centres of academic excellence under one roof, we would concentrate the care for related, recognizable patient groups in separate sections within the total complex. Among other things, this would enhance way finding and reduce patients' travelling times within the hospital complex. The 'thinking differently' concept inevitably resulted in related concepts: 'working differently' and 'building differently' [1]. So, 1999 also saw the start of the 'working differently' concept within this themed hospital. It focussed on the patients routing through the necessary care-elements, by standardized patient pathways, better planning of facilities, and bringing together all relevant disciplines around the patient, aided by IT-facilities. This will lead to quality improvement, straightening the path for patients and staff, and finally also result in a cost reduction.

When planning a new hospital in the Netherlands, it is important to note that the allowed square footage is limited and based on the allowed number of beds. The government reduced

our allowed number of beds to 1080 (excluding the Psychiatric Hospital), but gave freedom to so-called substitution within that number of beds. Government regulations saw reduction of beds throughout the system, enabled by reduced length of stay and an increase of treatment in ambulatory care settings. This government driven reduction of Erasmus MC's size (in close cooperation with the local health insurance companies) necessitated a fundamental rethinking of our services, with growing ambulatory care facilities and shorter stays of more severely ill patients in a tertiary care referral centre. It also made us more aware of our 'front door' (GP-practices) and 'back door' (home care, nursing homes etcetera) policies. Considerations like these gave birth to the first ideas about introducing single patient rooms as a way of reducing the physical number of beds required. For this concept could help bring down length of stay, allow better use of the beds available and enhance patient privacy, comfort and rest). Furthermore, it enables rooming-in (which was at the time only accepted in children's hospitals) possible for all patients.

2000: early days for all involved

The Dutch government requested reference projects for this new 'themed' hospital we were thinking about, which we found in the Mayo Clinic in Rochester, Minnesota (with its clinical Practice Integration Project) and the plans for the pavilion-built clinical care centres at St. Olav's Hospital in Trondheim, Norway. In Rochester we find evidence of the trend providing only private rooms in virtually all newly built hospitals throughout the USA. St. Olav's Hospital (which has a similar size and concept compared to Erasmus MC) has also chosen to provide single patient rooms only.

After having been informed about these reference projects, the Dutch government now shows an interest in this idea. However, they then demand evidence based-data as to the effect of private rooms on length of stay, patient satisfaction etcetera, demonstrating that the physical number of beds 'built' can be reduced even further. In the Netherlands, the number of beds still is the main driver in financing, building and maintaining a hospital. Dutch healthcare insurers also are interested now, for reasons as given above.

The Netherlands Board for Healthcare Facilities is interested as well, but states that the larger square footages for each bed thus required must be found within the overall standard for university hospitals, i.e. 96 m2/bed net footage, based on the allowed number of beds. They think it is too early to allow extra square footage for housing inpatients in private rooms (as the effect on recovery time is yet unknown) and suggest space must be found by building less physical beds or reducing the space needed for other hospital facilities such as laboratories, treatment rooms, kitchens or staff accommodation. Erasmus MC decides to go along with this line of thinking, and plans to provide for 985 beds out of the 1080 allowed, including 100 day care beds . Day care, however, will continue to use multi-bed rooms.

While Rotterdam is still planning for 885 single patient rooms in its new hospital, the new AvL/NKI Oncological Centre in Amsterdam is the first to provide single and double patient rooms only (as opposed to the generally used mix of four bed bays, double and single patient rooms); this project opens in 2003. This innovative mix is argued for on the ground that this specialized cancer hospital admits fewer, but more seriously ill patients. So, for this specific patient group this mix of facilities seems acceptable to all parties concerned, as everybody knows cancer patients are really ill when in hospital…

Meanwhile, not all doctors in Erasmus MC are convinced that the introduction of single patient rooms is the right thing to do. The benefits are generally accepted: reduction of hospital acquired infections (single patient rooms on a new ICU-ward have shown significantly bet-

ter results in our hospital) and of course more comfort for the patients [2]. On the other hand, many objections are raised: We might not be able to attract the number of nurses needed, "certain patients need stimulation from roommates to get well". How about joint care programmes for hip-replacement patients. Will we have enough beds when this further reduction takes place, etcetera. These sentiments are noted, but not given much feedback, as planning is still at an early stage and realisation is still a long way. However, in the first discussions with our patient representatives board we encounter mixed feelings as well, New pros and cons come up: e.g. better privacy, better opportunity for sleep/rest, private bathroom on the one hand, and patient safety risks, loneliness, etcetera on the other hand. These pros and cons are debated intensively, but at the time no consensus can be reached.

2001/2002/2003: The idea is taking shape

In these years we plan to invest in some serious research about the prospect of a new facility with only private rooms. For one, we propose to build a scale model of our future patient room, for everyone to see and try, with innovative design features. Then, we also propose to equip a renovated ward in the old hospital with 10 single patient rooms, which would enable us to obtain reliable data on the effect of single patient rooms on length of stay (comparing similar patients in single rooms and multi-patient rooms), nurses' workload, patient satisfaction, etcetera. The actual realisation of these plans, however, is hindered by planning permissions and uncertainties further in the project. In 2002 the first drawings are discussed by various interest groups within the hospital and by our patient representatives board.

Figure 1 *Room for social support in our mock-up*

Creating a 'healing environment' for the patient by providing a private room enters the discussion in Rotterdam as the project team discovers this subject to be a major issue in modern healthcare architecture and development. New evidence in scientific literature is found to support the chosen path towards private rooms only (with the exception of those groups of patients that benefit from stimuli from their direct surroundings) [3,4]. The literature is surveyed for evidence-based design guidelines, not only for the patient rooms, but for the hospital and its users in general [5]. The possibility to influence one's own environmental circumstances (temperature, light, opening a window or closing sun-shades) figures eminently in this research as a factor that can be facilitated by providing private rooms.

From personal experience in this period of time, I became a fervent believer in the concept of private rooms and its beneficial effect on recovery by enhancing facilities for social support and privacy. What joy when your partner can just sit with you, read a newspaper, and can pick up your pen, bring you some water, walk you to the bathroom, without you having to call a nurse (and this not just during regular visiting hours). What relief when you can speak to relatives and friends on the phone about your condition, without three pair of ears tuning in, etcetera. But ever since my own hospital experiences, I have also realised the downside of private rooms. Elderly people, for instance, might be lonely without visitors to offer social support, might get disoriented without the clearness of mind to know when to call a nurse, might ask the same question 30 times a day (and get to be ignored…), and might endanger their own therapy by not taking their medicine by lack of supervision (by roommates…). This aspect requires our attention as hospital planners and architects! Therefore I am glad that our planning team has identified the need for communal spaces on a ward with private rooms: places where you can share your meals with other patients, where you can go when you want to talk to fellow patients, be activated as an important aspect of recovery (provided it does not endanger your own and others' safety…). The idea of having rooming in facilities within each private room, however, is reconsidered, in favour of space for families on the ward and an adjourning 'family house' (such as the Ronald McDonald concept for children's hospitals).

Figure 2 *"Mobi" and "iCarus" in use in our mock-up*

In April 2003 Erasmus MC receives government permission to go ahead with the planning process. However, the number of beds (as the measure of allowed square footage and investment cost) must be reduced yet another 8%, bringing it down to 1000 beds, excluding the Psychiatric hospital. This condition forces us to review our plans again. Yet I am glad and proud that our decision makers have consented in making 'room' for our 21st century healthcare model, even though we have to make do with fewer beds than originally planned.

Spring 2003 we first meet up with the project team in Trondheim: their mock-up of the 'sengetun' is truly inspirational; we wonder, however, about en-suite bathrooms or the idea that toilets might suffice (when your are fit enough to take a shower unaided, you might as well go home). We appreciate the Norwegian emphasis on bringing in daylight and creating rooms with a view, even from a lying position in bed. We find kindred spirits in plans for a nearby patient hotel – available for relatives as well [6].

Around this time Erasmus MC's infection prevention unit conducts a literature survey on prevention of hospital acquired infections [2]. Although not peer-reviewed and published, it is translated in English and presented at an European Health Property Network meeting. Based on this literature survey, research is planned on the renovated ward with the 10 single patients rooms (coming in use in 2006).

We find that in these later years other hospitals (non-academic mostly) planning new facilities in the Netherlands have adopted the idea of including more single patient rooms within their mix of inpatient facilities or even planning for private rooms only. Running ahead of us, these initiatives will be ready before we are… The Netherlands Board of Hospital Facilities then publishes a new building guideline for hospital wards in which this trend is recognized and given status. It says: "The changing role of the patient, manifesting itself in his active involvement in his own care process, as an informed health consumer, with changed expectations regarding privacy and continuation of his personal lifestyle, quality and accessibility of services within the room and outside, autonomy and ability to take care of oneself, has led to new concepts of healthcare in designing patient wards, and even to concepts with only private patient rooms." [7] In the southern part of the Netherlands, Orbis Medical Park has chosen to build 426 private rooms, replacing its 677 present beds, based on a patient-and-process redesign focused hospital development project. Thus far it is the only hospital being this strict in its choice for private rooms. The private rooms will open up by glass sliding doors to a communal inner ward space, where social interaction among patients is facilitated.

2004/2005: The idea is becoming more mature

Early 2004 the mock-up of the Erasmus MC private room is opened to 'the public', i.e. patient representatives, Erasmus MC staff involved in the project, and others. Researchers from Delft Technical University's Industrial Design Faculty have designed some innovative features for the mock-up. Special attention was paid to the en-suite facilities: a sliding wall enabling wheelchair access in toilet/shower, while optimizing the space around the bed, when the en-suite facilities are not in use. Being a mock-up, and being still several years from the final interior design of our private rooms, we encourage this innovative work and have enabled design students to use the mock-up for their graduation projects . While at present the Erasmus MC hospital's exterior shell and floor framework is being designed, there is still time to give some more thought to the ideal single patient room for our university medical centre, the exact number of beds needed in 2012-2014, and the configuration between private and 4-bed rooms required. The shell and floor framework and IFD-design principles should allow for flexibility in converting 4-bed rooms in day-treatment wards to private rooms, whenever the needs arises (or vice versa). This possibility to convert within the standard ward lay-out was seen at the brand new NIH-facilities in Washington DC, and seems to us the way to proceed.

Final drawings for the pilot-ward are made, the contractor for the whole 'facelift' of patient wards in the existing hospital is selected by the end of 2004, and work is started. While at first we thought to study just the regular patient group of this Urology ward, we now consider-

Figure 3 *Room for social support in our mock-up*

studying different patient groups over the years to come. Research models are developed together with the Health Care Management Institute of Erasmus MC, to study the business process as well as the patient satisfaction aspects of the 10 private rooms with en-suite and rooming-in facilities.

Some insights for the period to come

Our network and awareness on the subject of evidence based design and the role of the private room in creating a healing environment for today's and tomorrow's seriously ill patients has grown over the last few years [8,9,10,11,12]. Our patients are thought to leave the Erasmus MC secondary but mostly tertiary care facility at the first possible moment, being discharged to go home, or (back) to regional general hospitals or nursing homes. Where in 1999 the idea of 100% private rooms in the Dutch context seemed revolutionary, five years later the subject is 'hot' although still disputable, as side effects are recognised as well.

The Netherlands Board of Hospital Facilities has been caught saying they may have discovered this subject rather late. Now they sponsor research by Maastricht University on the interior design and function of private rooms in hospitals, a research project in which Erasmus MC is again involved.

A thesis by a Erasmus University Master of Health Care Management student focuses on the considerations for Dutch hospital executives while choosing between strictly private rooms and a more traditional mix of private, double and 4-bed rooms in their new facilities [13]. He used the Pebble Project's Fable Hospital, Ulrich

	significance score 1-3	much better in private room	better in private room	neutral for choice	better for multi-bed room	much better for multi-bed room
PATIENT FOCUS (20%)						
privacy	3	x				
autonomy	2		x			
social support	2			x		
envionmental factors	2		x			
STAFF SATISFACTION (15%)						
QUALITY (35%)						
HOSPITAL EFFICIENCY (30%)						

Figure 4 *Scoring "Chamber choices" using J.J. van Geest's model*

and Zimring's literature survey, and Erasmus MC's preliminary research as a starting point [14,15]. The factors influencing choices are summarized in illustration 5, and point towards private rooms.

In constructive debates with patient representatives and those involved in primary processes in care and cure, our Executive Board holds the view that given current evidence it is not fair to offer patients in a university hospital a second rate solution by placing them in multi-patient rooms.

However, we must not close our eyes to the possible negative effects of a 'one size fits all' solution. We must realise that hospitalized patients nowadays and in the future will vary in their needs, and look for new solutions while designing this vital part of the hospital. Solutions may lie in creating space within the private room to accommodate those providing social support to the patient, or by allowing space for communal day-rooms for shared therapy, contact with 'fellow sufferers' as well as private sleeping quarters. It goes without saying that good quality of care is all-important for the patient's experience in hospital. Patient safety should be a main focus, but I am convinced that other aspects influence the healing process as well.

Earlier this year we were pointed to early findings from the Ringerike Sykehus, Hønefoss, Norway. This new hospital with 128 private rooms was able to reduce the number of staff on duty during the night, because patients being properly asleep need less (non-medical) attention. We will visit this hospital later this year with some of Erasmus MC's leading people involved in the discussion about unit size, management of beds over the classical department borders, etcetera. Questions still unanswered are, for example, whether step-down care is preferred over rooms adaptable for various levels of acuity so that patients need not be transferred, which reduces the risk of faults and miscommunication. Also, what diversity of patients can be nursed on a single ward, due to the mix of

Figure 6 *"Mobi" in use in our mock-up*

medical and nursing skills involved? Luckily our planning process in Rotterdam allows us the time to seriously consider all these aspects!

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