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### Hospital Capacity Planning-With Space in Mind

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Most European hospitals will have to expand their examination and treatment capacity in the future, as well as rearrange and restructure core functions. Whether to remain competitive or for other reasons, it will be essential to maximise short and longterm performance. It is seldom economically viable to build oneself out of capacity problems—regardless of how healthcare investments are financed.

SINTEF Health research has been doing capacity planning projects on national, regional and hospital trust levels for specialist somatic and psychiatric healthcare services. This article will focus on the role of capacity in relation to buildings and space in strategic hospital planning. We will use a typical planning process to highlight the levels of capacity planning that need to be addressed, and conclude with some implications for hospital management.

Hospital expansion plans are usually a product of institutional dissatisfaction with working conditions that have built up over a number of years. Often this is a result of ongoing changes in medical technology, models of care, demographics and epidemiology, and emerges from a lack of proactive planning from hospital administration. Investment projects for solving problems with cramped space, poor capacity and functionality, however, often derive from a process based upon clinicians' judgments of their own treatment capacity. Gradually, these judgments are adopted by hospital administration, and culminate in a definitive need for expanded capacity, which is undisputed. Too often, this leads to plans for building additions to hospitals, without a thorough examination of how existing buildings may be utilised to increase the existing treatment capacity and in turn, relieve the pressure for investing in infrastructure to simply solve structural problems. Such projects may not always match paramount objectives.

A teaching hospital in northern Norway recently asked us to examine their plans for a 7000m<sup>2</sup> expansion, which was supposed to solve the hospital's need for more beds. The activity analysis showed that the hospital had a lower utilisation of beds, a higher amount of personnel per patient and per bed day, and a lower outpatient production than comparable hospitals. The combined capacity/ space analysis of the project showed that the hospital had a lower and unevenly distributed use of their beds and available space between clinical (sub)specialties. Some departments had low space standards per bed, while others had very high standards. This led to a sub-optimal use of hospital space. After an examination of possibilities for reshuffling the functional elements of the hospital, our study concluded that at present, there was no need for the 7000 m<sup>2</sup> building project. From the onset, our study generated some resentment from local stakeholders, but in the end, the hospital was content with our critical examination of their plans. The final result remains to be seen, but continuing pressure from medical professions and plans for an extension still persist.

This Norwegian hospital project demonstrates several beneficial points on coping with lack of hospital capacity:

- Hospital administration should have both the determination and the ability to explore all possibilities for maximising activity within the existing hospital, not relying exclusively on clinicians' judgments. Hospital management should conduct critical studies concerning treatment capacity utilisation, length of stay, and other determinants.
- Collaboration with other providers in the treatment chain, outside the hospital should be developed, in order to expand the hospital capacity itself as well as utilise the capacity of others.
- Hospital administration should attempt to reduce internal pressure for unnecessary expansion as much as possible. In this context, hospital leaders' need to prioritise activity within limited capacity is imperative.
- Priorities should be based upon quantified arguments, and should at all times be as definite as possible.
- Hospital managers should always have indicators and access to detailed, quantitative data that makes internal capacity assessment and decisions possible. This data may differ from those used to report indicators at that regional and national levels.
- Long term forecasting models should be employed, refined and upgraded in line with the extended knowledge of system development.
- Hospital strategy should include the vision of making the institution as small as possible in terms of the number of inpatients.

As capacity of any given function is closely related to efficiency, organising workflow is the key to expanding capacity. On a hospital level, this may lead to extensive rearranging of work. The ability of hospital administration to encourage better utilisation of the existing rooms may lead to improving results up to a given point. After that threshold is reached, creative rearranging of work may be the only answer to the internal problems. Existing ways of organising work should be challenged. The planning on hospital / trust level will always have to take the existing facility into account, in terms of activity, capacity and space. Positive results may not be reached immediately, but every hospital should be capable of monitoring activity, capacity and space use.

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