

# Same-day discharge after percutaneous coronary intervention

The prevailing clinical practice at Norwegian PCI centres is for patients to be hospitalised overnight in the ward or at the patient hotel after uncomplicated PCI treatment of stable angina. Following adequate observation, it should be possible to discharge stable patients in this category the same day.

It is currently common practice for patients treated with percutaneous coronary intervention (PCI) for stable coronary artery disease (CAD) to remain under observation in hospital until the following day. Same-day discharge following uncomplicated procedures was described already in 1995 (1), when other types of anticoagulants were used than those available today. A low prevalence of serious complications is reported, even after transfemoral access with relatively larger sheath (8-French) and use of closure device. The same article describes an economic analysis which concluded that this practice was also correlated with lower costs (2).

Centres that switched to transradial access in the early 1990s were able to report that after uncomplicated elective PCI, patients in both the over and under 75-year age groups could be discharged the same day without increased risk of complications (3). A review of more recent literature reveals that early discharge is safe for patients who have undergone uncomplicated PCI treatment for stable coronary artery disease (4, 5).

## Hospital costs and high bed occupancy

Same-day discharge may reduce hospital costs by up to 50 % compared with current routines (6). A recent Norwegian study documents a reduction in median length of stay from 1.25 to 0.24 days for same-day retransfer to the referring hospital of patients with acute coronary syndrome treated with percutaneous coronary intervention. This resulted in a reduction in treatment costs (7).

Studies show a significant increase in hospital mortality when bed occupancy exceeds 92 %. Some countries have taken into account the consequence of this and set the safe practice level at 85 % of available bed capacity (8, 9). Consequences of very high bed occupancy include increased risk of treatment error and reduced operational efficiency. A Danish study has also documented an increase in mortality (10). The growth in the number of hospitalised elderly patients brings with it an increased number of more complex diagnoses and longer hospitalisation periods. Measures that can reduce high bed occupancy may therefore directly and indirectly result in better patient treatment. There will be less

use of costly patient beds following PCI treatment, which will enable a buffer capacity to be maintained for those who need it most. This will presumably also yield economic savings and free up staff resources.

The 2014 annual report from the Norwegian Registry for Cardiac Surgery shows that annual PCI figures are stable at around 12 000 procedures from 2010, while the

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annual number of coronary artery bypass operations (CABG) is falling – from 3 430 in 2004 to 1 709 in 2014 (11). A review of figures for local PCI procedures for 2014 from Stavanger University Hospital reveals that approximately 40 % of these were planned procedures in patients with stable coronary artery disease. Given that the patient distribution is the same in most PCI centres, a significant proportion of patients, presumably around 4 000–5 000, could be assessed for same-day discharge. This can result in a considerable reduction in hospitalisation periods, more rational utilisation of bed capacity and better use of health personnel.

## Patient selection and safety

Criteria for patient selection must be set carefully, and account taken of the patients' wishes. The main inclusion criterion is an uncomplicated transradial or transfemoral procedure with satisfactory results, while symptomatic heart failure, poor renal function and long travel distance to the PCI centre are some of the most important exclusion criteria (12). The exclusion criteria must be clearly stated to preserve patient safety. The number of PCI procedures using transradial access is increasing internationally (13), and this facilitates early discharge of patients and reduces observation time. The risk of complications and bleeding from the access site has also been significantly reduced following the switch to transradial procedures (13). Most Norwegian PCI centres have switched to

transradial procedures and established a «radial lounge». This improves patient flow, which is essential in today's overcrowded departments where bed occupancy is constantly at a critical level. There is a low prevalence of complications in the form of vascular injury with bleeding, and compartment syndrome in the arm musculature (14).

The need for cardiac troponin measurement following uncomplicated PCI procedure in stable patients is debatable (12), as it has been shown that a rise in troponin up to five times above the reference level has little prognostic value (12). In the case of an uncomplicated procedure with no long-term pain, absence of slow flow/no re-flow (either in main or side branches) or arrhythmia related to the procedure, a modest rise in troponin level is of little practical importance. Experience has been transferred and tested from stable patients to patients with acute coronary syndrome (15).

## Follow-up and implementation

Patient safety and satisfaction are central to this strategy. If the PCI operator has the opportunity to communicate the discharge information in person, the need for information can be satisfactorily covered and best patient care with continuity of patient treatment enhanced. This in turn may prevent the uncertainty created by insufficient and/or conflicting information from different actors involved in the patient care. Follow-up by telephone the day after discharge can provide reassurance for the patient as well as the centre responsible for the treatment. This follow-up should be undertaken by personnel who have sound knowledge of PCI procedures and experience with cardiac patients, preferably specialised nurses who were involved in the patient's treatment the previous day. This will enable possible complications to be detected, while also providing the opportunity to give relevant information and to answer questions that may arise after the patient arrives home.

We have started a prospective study (Stavanger UncomPlicatEd Elective PCI Same DaY Discharge Study – SPEEDY study) with randomisation of patients either to same-day discharge or standard routine (16). With the aid of standardised questionnaires, patient satisfaction will be assessed and a limited economic analysis undertaken.

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