

# Fracture liaison service

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## VALORIZATION

### *Introduction*

This chapter describes valorization of a number of our findings in this dissertation, focusing on secondary fracture prevention and the Fracture Liaison Service (FLS), from a nurse practitioner's perspective. The importance of Secondary fracture prevention in general is recognized and supported by the International Osteoporosis Foundation (IOF) and by other international and national scientific organizations and authorities. In view of effectiveness, FLS care has become highly recommended. However, the low FLS attendance rate of patients with a recent fracture has been recognized as a huge problem needing further exploration. In this dissertation, we examined the following topics related to secondary fracture prevention: hospital registration, patient information and patient knowledge about their subsequent fracture risk, value of a portable ultrasound device in screening, nutritional calcium intake and medication adherence.

### *Valorization*

In the Reinier de Graaf Hospital, we discovered that 14% of patients older than 50 years with a fracture were not invited at the FLS, due to hospital registration inaccuracies. The cause is that FLS invitation strategies are traditionally based on hospital registrations at entry, not on exit registration and between these time points a diagnosis of fracture could have been added. Use of financial department registrations (using exit DBC registrations) is recommended to increase the accuracy of FLS invitation.

The second topic studied is patient information, which is part of our invitation strategy to attend the FLS. Surprisingly, our personal information given to the patient was not recalled by any of our non-attending fracture patients. In contrast, more than half of FLS attenders could recall the information letter received as a reason to attend the FLS. We also observed a major knowledge gap regarding the increased imminent subsequent fracture risk, which was often grossly underestimated. The main reasons were low interest in bone health and (according to the literature) low health illiteracy. These findings emphasize the need for a systematic FLS nurse-led approach to ensure adequate and timely information to patients, preferentially as soon as possible after the initial fracture, e.g. during the fracture healing phase. This

practice has been routinely implemented in the Reinier de Graaf Hospital FLS setting. Patient information is given by our plaster nurses and/or orthopedic and trauma surgeons, but still needs improvement so that patients recall this information.

Another topic addressed in this dissertation is the reinforcement of screening procedures. By using a portable ultrasound device, we yielded a 19 percent benefit by avoiding the performance of DXA and VFA in low risk women of 50-70 years. In addition, this might be attractive as a moment of persuasion to strengthen the message to our patients, since a 'positive' outcome could motivate patients to agree with further assessment by DXA and VFA, while a negative outcome could reassure patients without the need of further assessments. However, it should be further evaluated whether the same holds for elderly patients.

We also performed an audit in the Netherlands on Dutch FLS quality using the Capture the Fracture® (CtF®) Best Practice Framework Standards of Care. FLS attendance reported by 24 Dutch FLS's was on average 49%, which obviously is too low. In FLS attenders the FLS's complied for more than 90% on the 13 CtF® Standards of care and for more than 70% with fall prevention strategies. Currently there is no nationwide database on patients evaluated in Dutch FLSs. Based on the findings of this first audit in the Netherlands, we were able to bring the results to the attention of the Dutch governmental Health Council (Zorginstituut) focusing on the unacceptably low FLS attendance rates.

Reasons for 'non-attendance' were further assessed in two FLS studies, carried out in the Reinier de Graaf hospital. Frailty, male gender, having low general education, living alone, and low interest in bone health and subsequent fracture risk were independent determinants for FLS non-attendance. Adequate motivation of patients by the healthcare professional shortly after the fracture, or the lack of it, was the strongest determinant associated with both FLS attendance and non-attendance. Remarkably, still 25% of non-responders to FLS invitation consented with a home visit after one telephone call, and these were mainly older women with a major fracture, i.e. those who would most benefit from secondary fracture prevention. These patients could not recall any face-to-face patient information given to them in the hospital. Still FLS invitation by letter was recalled in more than 60%. FLS nurses and nurse practitioners could therefore ease the transition from hospital to GP care in the high-risk group of FLS non-responders/non-attenders to contact the GP for further evaluation and treatment. For the nurse in charge with FLS logistics it may be

advisable to contact the non-responding patients and organize further FLS care in collaboration with GPs. Care for the patient, wherever offered, is part of our mission and is directly in line with the vision propagated by Value Based Health Care (VBHC). Our study on dairy calcium consumption among fracture patients turned out to be very feasible. We found a shortage of daily dairy calcium intake in many fracture patients, independently of age, gender or residential area (urban or rural). A good nutritional history and advice is therefore part of the basic package of care that can specifically be offered by FLS nurses.

Based on well reported follow-up strategies by 24 FLS's in the Netherlands (as reported in our Dutch audit), we decided to study our own performance with regard to oral bisphosphonates-initiation and adherence. One telephone call at three months after treatment initiation was useful to discuss adherence, eventual side effects or medication discontinuation. Additional telephone calls during follow-up appeared not to be efficacious. Corrected bone turnover marker levels (P1NP and s-CTX) showed high agreements with pharmacies deliveries according to the Dutch Landelijk Schakelpunt database (LSP) by 12 months. Since LSP is accessible to all health care professionals, we propose that FLS nurses can use LSP to assure adherence to oral bisphosphonates at 12 months post-treatment initiation. Thus, one telephone call is advised for evaluating adherence, side effects and if applicable, reasons for medication discontinuation. The value of measuring and following bone markers is more complex, as it needs strict monitoring of timing of blood samples and additional studies on cost.

The work presented in this dissertation is based on nurse practitioner initiated studies. This should be a stimulus for nurse colleagues for initiating new FLs studies on their role in secondary fracture prevention. We foresee a challenging role for NPs to participate in future initiatives. Therefore, Dutch FLS nurses and nurse practitioners should further strengthen their vision and experience with implementation in the national professional association (VF&O) guaranteeing professional information and training for newcomers. Moreover, next to nurses, nurse practitioners act in a coordinative role in many FLS's throughout the country. Their legal authorizations are not only confined to traditional aspects of nursery care, lifestyle aspects and nutrition, but also include initiation of medical therapies and consequent medication adherence.

Finally, dedicated nurses and/or nurse practitioners support the vision of a FLS

nurse-led model in line with the concepts of Value Based Health Care (VBHC). Our professional association was privileged to participate in the national working group for the preparation of a national guideline and working group on standards of osteoporosis care. In this position, the nurses' association can propagate their visions on transition of hospital care in the Zinnige Zorg Trajectory on Osteoporosis (Dutch governmental Health Council, Gezondheidsraad) and the National Guideline on Osteoporosis and Fracture prevention.

In summary, this dissertation may serve as a blueprint of our motivation and scientific interest. I would like to commission my work to all colleague nurses and nurse practitioners who act according to care, cure and scientific reasoning.