

Supporting Elderly Patients at Risk in Hospital Environments

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Consistently low birth rates and higher life expectancy lead towards an older population structure in Western countries. In Europe, the proportion of people 65 years and older increased from 16.6% in 2005 to 18.9% in 2015, with Germany, Italy and Greece having the highest share of people 65 years and older in the total population. The median age of the total population also increased by about 4 years from 2005 to 2015 so that the proportion of older people will increase strongly in the future. Especially the proportion of very old people 80 years and older is rising due to better living standards, lifestyles and education, as well as rapid progress in healthcare and medicine so that it is expected to more than double from 5.3% in 2015 to 10.9% in 2050 [1].

Consequently, hospitals are confronted with an increasing number of older patients, which have been shown to exhibit an increased risk of adverse outcomes during and after the hospital stay compared to younger patients [2,3]. An important factor contributing to this increased risk of adverse outcomes is that many old patients suffer from multimorbidity, defined as the coexistence of 2 or more chronic disease conditions. Worldwide, the prevalence of multimorbidity in elderly patients ranges from 13% to 83% with a median of 63% and increasing prevalence rates with increasing age [4]. When split by physical and mental comorbidities, about 18% of patients between 65 and 84 years had physical and mental health comorbidity which again increased with age with patients ≥ 85 years already demonstrating combined physical and mental comorbidity of 31% [5].

Dementia is an important aspect of multimorbidity, since about 95% of dementia patients exhibit multimorbidity with hypertension and depression being among the most important comorbidities [6]. The number of people with dementia worldwide will increase from 44 million in 2013 to 76 million in 2030 and 135 million by 2050 with aging being the main driver of dementia [7]. Dementia patients have an increased risk of in-hospital complications and need specific structures and treatment for optimized care [8,9]. However, routine care in hospitals today is mostly designed for young or middle-aged patients and focusses on the primary illness of interest, comorbid conditions like dementia which do not fall in the specialty are often not detected [10] but can lead to serious complications [8]. Consequently, early identification of patients at increased risk of adverse outcomes becomes more and more important.

Several instruments like the Triage Risk Stratification Tool (TRST), Hospital Admission Risk Profile (HARP), Score Hospitalier d'Evaluation du Risque de Perte d'Autonomie (SHERPA) and Identification of Seniors at Risk (ISAR) have been developed to identify such patients [11], of which the ISAR [12] is the most frequently used screening tool which has been validated in different cohorts and reached the highest level of evidence [13]. Although the development and validation of ISAR was carried out in the emergency department setting, ISAR may also be valuable in other settings. Various geriatric societies already suggested ISAR screening followed by comprehensive geriatric assessment in case of abnormal screening results or information not allowing a clear decision [14,15], however geriatric wards and geriatric counseling are still scarce.

We for the first time evaluated ISAR screening followed by standardized comprehensive geriatric assessment in a German university

orthopedics and trauma surgery environment [16]. ISAR consists of 6 questions with dichotomized yes/no answers assessing functional dependence (premorbid and acute change), recent hospitalization, impaired memory and impaired vision and polymedication (≥ 6 medications) [12]. According to different validation studies, a score of 2 or higher should be regarded as abnormal and trigger further assessment of age-related risks [17]. In our cohort of 381 patients ≥ 75 years admitted to the Department of Orthopedics and Trauma Surgery of the University Hospital Essen, 327 (85.8%) ISAR screenings were abnormal, confirming a high percentage of patients at risk of adverse outcomes.

Regarding single items, premorbid functional dependence (59.8%), acute change in functional dependence (86.1%) and polymedication (45.1%) were most frequently reported, while a lower, but still highly relevant proportion had recent hospitalization (35.2%), impaired vision (28.9%) and impaired memory (32.5%). In the comprehensive geriatric assessment following abnormal ISAR screening, 85% of patients had abnormal activities in daily living, 84% mobility impairment, 72% cognitive impairment and 14% depression. These data underline the need of specialized hospital structures like consultation and liaison services or geriatric wards with multidisciplinary interacting teams including geriatricians, neurologists, psychiatrists, psychologists, physio- and ergotherapists, social workers and trained nursing staff [8].

Different studies have already shown that outcomes of older patients can be improved by comprehensive geriatric assessment and intervention. In a meta-analysis of 22 randomised controlled trials of comprehensive geriatric assessment, delivered by mobile teams or in designated wards, compared with usual care (including 10,315 participants in six countries), death or deterioration of functional ability and decline in cognitive function at 1 year follow-up was less likely in patients receiving comprehensive geriatric assessment compared with those receiving general medical care. For the outcome of living at home at follow-up, the beneficial effect of comprehensive geriatric assessment was only observed for wards, not for mobile teams. Reasons for this effect could be that working in close proximity on a ward facilitates more efficient and effective multidisciplinary working with exchange of knowledge and that mobile teams experience difficulties to put through recommendations due to lower proximity and less presence on the ward. From the economical view, often a reduction in costs by comprehensive geriatric assessment is noted, especially when nursing home costs are taken into account [18].

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To conclude, the worldwide ageing of the society is challenging our health care system. Identification of elderly patients at high risk for negative outcomes and adaption of routine patient care to meet the specific needs of elderly multimorbid patients with reduced functional reserve by interdisciplinary team work is urgently needed since multiple studies already demonstrated benefits by these approaches [8,9,18,19]. The feasibility and cost-effectiveness of such approaches in different settings still has to be evaluated as well as the effect on comprehensive patient outcomes after the hospital visit such as mortality, rehospitalization, institutionalization, use of home healthcare services and quality of life including psychological and social aspects.

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