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Chapter 8

General discussion

GENERAL DISCUSSION

Preventive care traditionally refers to measures taken to prevent disease and injury and, generally, not to less well-defined goals such as maintenance of independence and wellbeing. With old age, however, the prevalence of ailments and chronic diseases increases, leading to a decrease in independence and wellbeing. Because older people differ considerably from each other with regard to health and functional status, a 'one size fits all' program for prevention is not possible. For some subgroups, preventive care might be used to enable people to live as independently as possible by preventing or postponing disability and social isolation. For others, prevention of disease to lengthen life expectancy will probably be the most suitable aim. Moreover, preventive programs can be organized collectively as well as individually. These two dimensions of preventive care for older people are described in Chapter 1. In short, it remains unclear which approach and which aim will be most appropriate in preventive care for older people. However, it is possible that specific subgroups of older people can be identified who will need the same approaches for the same aims. This chapter discusses the possibilities to develop strategies (varying in their aim and approach) in preventive care for older people and makes some recommendations for clinical practice and future research.

1. Exploration of aims in preventive care for older people

Is there scientific support for the idea that the aim of prevention is not only to prevent disease and injury, but also to maintain independence and wellbeing?

In current health policy¹⁻⁴ much attention is directed to the older population. The aging society implies that more people will be dependent on caregivers and healthcare facilities. Health care for older persons might contribute to the maintenance of good physical and mental health, and might help older people to stay independent and participate in social activities for a longer period of time. It is important to develop strategies in health care for older people which not only contribute to their life expectancy but also help to maintain their daily functioning and wellbeing. Therefore, it is necessary to investigate whether preventive strategies can indeed contribute to these aims.

Chapter 2 shows that general practitioners (GPs) believe that preventive care can contribute to life expectancy and to functioning in daily life and wellbeing. According to GPs, the focus of preventive care for their older patients depends on the level of vitality of the individual person, rather than on their age. In all discussions, the level of vitality as perceived by the GP tends to influence their ideas about preventive care. When older people become less vital and thus more vulnerable, the scope of preventive care supplied by the GP shifts from a 'disease model' to a 'functional model', and from mainly cardiovascular risk management to preventing functional decline. These findings reveal

that GPs believe that vulnerable older people require a prevention strategy that differs from that for vital older people; however, it is not known to what extent this idea actually mirrors the behavior of GPs. Current international screening guidelines⁵⁻¹³ tend to ignore a differentiation in aims that depend mainly on patient characteristics. Therefore, it is also unknown whether screening can contribute to the prevention of functional decline in older people.

In Chapter 5 evidence for the contribution of screening to the prevention of functional decline in older persons was investigated and the outcomes were stratified for three age groups (60-74, 75-84 and 85-plus years) and three levels of vitality, i.e. for the general population, and for the population divided into vital and vulnerable persons. The appropriateness of screening was assessed by an expert panel using the RAND/UCLA method. In general, the panelists appreciated the idea to investigate the contribution of screening to the maintenance of independence and wellbeing, whereas until then screening was mainly applied to the prevention of disease. The panelists considered vulnerability to be an important factor in the determination of the appropriateness of screening to maintain independence and wellbeing, whereas age scarcely influenced the appropriateness of screening. Although, according to current knowledge, evidence for the value of screening vulnerable people is still lacking, the panelists expect benefits for (in particular) vulnerable people when more tests and interventions are developed for this specific group. This conclusion is in accordance with the ideas presented by the GPs (Chapter 2).

In conclusion, many health policies aim at the maintenance of independence and wellbeing for older people. GPs and other professionals in geriatric care also consider this aim to be relevant for prevention, but the appropriateness of this aim appears to depend on the level of vitality of the individual older person. Therefore, maintenance of independence and wellbeing is an important aim in preventive care, complementing the traditional aim of prevention of disease. Especially in older vulnerable individuals, professionals expect that preventive care can contribute to the maintenance of independence and wellbeing.

2. Maintenance of independence and wellbeing

a. Is it possible to identify older people who will benefit from a preventive approach which contributes to the maintenance of independence and wellbeing?

To develop preventive strategies to maintain independence and wellbeing, screening instruments are needed to identify vulnerable older people at high risk for deterioration in the near future. It is known that chronic diseases¹⁴⁻²⁰ and multimorbidity¹⁹⁻²¹ are strongly related to disability. Moreover, although a variety of tools are available to

measure vulnerability in various ways,²²⁻²⁸ there is no standardized and valid method to screen for manifestations of vulnerability.

In the discussions in the focus group study, the GPs appeared to be able to differentiate between vulnerable and vital older persons (Chapter 2), even though no definitions for 'vital' and 'vulnerable' were specified. Interestingly, during the discussions there was no confusion between the GPs regarding these two categories of older persons; it seems that the GPs used an implicit concept of vulnerability. Perhaps GPs share a unique perspective as to what defines vulnerability; on the other hand, perhaps they remained unaware of actual distinctive perspectives related to the concept 'vulnerability'. Therefore, the variability between GPs in their assessment of vulnerability was studied in Chapter 4. In the RAND study (Chapter 5), the expert panel started their discussion by formulating a definition of vulnerable persons, i.e. older people with (simultaneously) a high prevalence of diseases/disorders, a poorer prognosis, disability of various kinds, and multiple problems. These general characteristics appeared to be sufficient for the expert panel to discuss and assess the appropriateness of the screening topics.

Due to the lack of a gold standard for the selection of vulnerable older people at risk for functional decline, we investigated two ways to predict the vulnerability of older persons. In the first study (Chapter 3) the predictive value of multimorbidity was explored for its association with an increase in disability over time and the role of cognitive impairment in this association. The Leiden 85-plus Study, a population-based study of individuals aged 85-plus (Chapter 3) with a 5-year follow-up, showed that the predictive value of multimorbidity for an increase of disability in activities in daily living (ADL) varies with cognitive function in very old people. Remarkably, multimorbidity predicted an accelerated increase of disability in ADL only in older people with a Mini-Mental State Examination (MMSE) score ≥ 28 points at baseline. In persons with a lower MMSE score this predictive relation was not present, possibly because the cognitive problems dominated the functionality. This implies that the prevalence of multimorbidity in older people (a relatively easy measurement for GPs) is an indicator for risk in deterioration of ADL performance in only 35% of this age group, because 65% of the 85-plus population no longer has an MMSE score ≥ 28 points. Therefore, preventive programs to promote older people to live as independently as possible cannot be based on multimorbidity as the sole selection criterion. At least a two-stage screening test is needed, which encompasses cognition screening as a first step and multimorbidity screening as the second, in order to select older people at increased risk for disability.

Since the effect of cognitive impairment seems to dominate the effect of multimorbidity on ADL performance, in clinical practice the cognitive function of older people is

probably a better predictor of increased disability in ADL than multimorbidity. To select people with cognitive impairment using the MMSE measurement is a relatively complex strategy, partly because MMSE measurement is labor-intensive and also costly. It is questionable whether a formal MMSE measurement is needed to select people with optimal cognitive function. Most likely GPs know their patients well enough to classify them by 'gut feeling' into those with and without optimal cognitive function. In this way they can limit testing to those for whom there is some doubt about their level of cognitive functioning.

GPs seem to apply an intuitive gut feeling in various clinical situations. Stolper et al.²⁹ reported that a gut feeling can produce a 'sense of alarm'; this is defined as an uneasy feeling perceived by GPs when they become concerned about a possible adverse outcome, even when a specific indication is lacking. '*There's something wrong here*' seems to be the sense of alarm that activates the diagnostic process of GPs and motivates them to initiate specific management to prevent serious health problems. A prerequisite for this gut feeling is sufficient knowledge of the person and, for several issues, this requires long-term observation (to establish a decline/irregularity). This stresses the need for regular consultation with or visits to older patients.

Similarly, the notion of 'vulnerability' may also be a concept such as gut feeling. GPs seemed to share a unique perspective as to what constitutes vulnerability (Chapter 2), without a need for explicit criteria or a gold standard. Chapter 4 examines variability in the assessment of vulnerability between GPs to determine whether GPs indeed share a uniform concept of vulnerability. The percentage of patients aged 75-plus assessed as being vulnerable by the GP varied per GP: median 32.0% (IQR 19.5 to 40.1%, range 2.4 to 81.0%). This variation was not only due to differences in the case mix of their patients, but also to differences in the weighing that GPs attribute to some patient characteristics in the assessment of vulnerability. GPs were similar in the way they took into account patient characteristics in the medical and psychological domains in their vulnerability assessment, but differed in the way that they weighed the functional status. These findings might be attributed to differences in the education of GPs and the corresponding focus on diseases. More uniformity might be achieved when GPs receive additional training in the use of a functional model as concept of care.

In conclusion, these two studies support the possibility to select older people at risk for deterioration in functioning, as well as older people who are vulnerable according to assessment by GPs. However, more studies are needed to compare the outcomes of the vulnerability assessment by GPs with those of existing tools that measure vulnerability. These analyses might reveal the additional value of screening tools compared

to the assessment by GPs (which is simple, not costly and apparently reliable). When stratification on vulnerability becomes feasible this will allow to select older individuals that, according to GPs (Chapter 2), may benefit from preventive care to maintain their independence and wellbeing.

b. Which preventive strategies are appropriate to contribute to the maintenance of independence and wellbeing?

The previous section discussed the possibility to select vulnerable older persons and this section examines the usefulness of stratification on vulnerability. The next step is to explore whether preventive activities are available for the group of people who require maintenance of independence and wellbeing. According to the GPs in the focus group discussions (Chapter 2), preventive care for vulnerable people requires an individualized approach to prevent functional decline. However, the RAND study investigated whether a collective approach could be appropriate to maintain independence and wellbeing (Chapter 5). The appropriateness of screening older people to prevent functional decline was studied and the outcomes were stratified for levels of vitality status, i.e. the overall general population, and a population divided into vital and vulnerable older persons. The appropriateness was assessed by an expert panel using the RAND/UCLA appropriateness method. In order to conclude that screening to prevent functional decline is appropriate, the screening must at least (in general) approximately meet the criteria described by Wilson and Jungner.³⁰ When evidence on fulfilling the criteria of Wilson and Jungner was lacking or inconclusive, the experts' opinions regarding a potential benefit to prevent functional decline were taken into account.

Despite increasing interest in screening of community-dwelling older people and the recommendations in guidelines, the expert panel considered screening to maintain independence and wellbeing to be appropriate for only a few conditions. Screening for insufficient physical activity in order to prevent functional decline was considered appropriate for all older persons, without a distinction being made between the level of vitality or age. Screening for cardiovascular risk factors and smoking status is considered useful for the general older population aged 60-74 years. In the higher age groups, however, screening for cardiovascular risk factors and smoking faces lack of evidence, because the traditional risk factors no longer accurately predict the cardiovascular risk.³¹ There was insufficient evidence to support screening for the other investigated conditions. Interventions that merely stimulate wellbeing (e.g. interventions dealing with loneliness) were not considered to be supported by strong evidence. However, based on experience, the expert panel expected at least some benefit from these interventions for the vulnerable population. For 11 of the 29 investigated conditions, the expert panel was uncertain about the appropriateness of screening vulnerable older persons, whereas

they considered screening of older people with good vitality for the same condition to be inappropriate. Since the majority of vulnerable older persons already receive medical care for their chronic disease(s), the expert panel expected more benefit to be derived from improving regular medical care than from a separate screening program.

In conclusion, to maintain independence and wellbeing, it is recommended to distinguish between vital and vulnerable older people, because most benefit is expected in the vulnerable population. However, screening for disorders/ailments might not be the appropriate preventive strategy to contribute to the maintenance of independence and wellbeing: there is little evidence for such a collective approach and a separate screening program might not be the appropriate strategy for vulnerable older persons. Preventive care for vulnerable older people probably needs a more individualized approach within the structure of regular care.

3. Prevention of disease, focusing on cardiovascular disease

a. Is it possible to identify subgroups by screening older people to prevent disease?

The focus group study (Chapter 2) revealed that, apart from the national cancer screening (breast/colon cancer) and vaccination programs, cardiovascular risk management is considered the main topic in disease prevention. Chapter 5 shows that cardiovascular risk management based on risk stratification appeared to be appropriate in the general and vital older population aged 60-74 years to maintain independence and wellbeing, although there was uncertainty regarding the vulnerable population. In the general and vital older population cardiovascular risk management is considered to be appropriate because it increases life expectancy in these groups and prevents a cardiovascular disease-related decrease in functional status. In vulnerable older people, however, healthcare professionals did not reach agreement: some rated cardiovascular screening as appropriate and others as inappropriate. However, if cardiovascular risk management is not applied in this group, not only will the number of cardiovascular deaths increase but so will the number of non-fatal cardiovascular diseases, with a further decrease in functional status and wellbeing in this population. Therefore, selecting subgroups of older people based on risk stratification for cardiovascular disease and death will (potentially) be appropriate for both vital and vulnerable persons because cardiovascular risk management prevents death and contributes to the maintenance of independence and wellbeing. However, the traditional cardiovascular risk management based on classic risk factors (like the Framingham Risk Score) is appropriate for people aged ≤ 75 years but is not applicable for those older than 75 years.³¹

The Leiden 85-plus Study (Chapter 6) investigated the possibility to select subgroups of older people at high risk for cardiovascular morbidity and mortality. In very old

community-dwelling people, differences in prognosis between those with various levels of prevalent cardiovascular disease were compared with those with no manifest cardiovascular disease. The prognosis was studied not only regarding incident cardiovascular morbidity and mortality, but also with respect to functional status. Participants with a history of major cardiovascular disease had a markedly increased risk of recurrent myocardial infarction, stroke and functional decline, as well as cardiovascular and all-cause mortality. Patients with a history of minor cardiovascular disease had a relatively better prognosis. Therefore, the extent of the cardiovascular disease history is an easy screening tool for clinicians to identify patients at high risk for new cardiovascular events, functional decline and cardiovascular mortality, as well as all-cause mortality. These results encourage both physicians and very old patients with a history of major cardiovascular disease to maximize their cardiovascular preventive efforts. However, when adverse effects/harmful interactions arise in very old patients with minor cardiovascular disease, the balance between benefit and harm might change and strict continuation of preventive medication might be reconsidered. In the future other cardiovascular risk markers might be identified with better high-risk selection mechanisms; however, this study shows that even in very old age, risk stratification for cardiovascular morbidity/mortality is possible in the general older population.

b. Is a high-risk approach an appropriate preventive strategy to contribute to prevention of cardiovascular disease in older persons?

The next question to be addressed is whether a high-risk approach not only selects people with the highest risk of events, but also those who will derive the most benefit from preventive cardiovascular treatment. Earlier studies showed that even in the general older populations, preventive cardiovascular treatment is still effective.^{32,33} To investigate whether preventive cardiovascular intervention is more effective in subgroups of older people at highest risk, the effect of preventive pravastatin treatment was investigated in three groups at risk for cardiovascular disease stratified on their plasma levels of homocysteine. Earlier, De Ruijter et al. showed that in older persons stratification based on homocysteine presents a possibility to select those at high cardiovascular risk.³¹ To investigate the effect of preventive treatment in these subgroups, a post-hoc subgroup analysis was performed in PROSPER³³ (a large double-blinded randomized placebo-controlled trial) to assess the effect of pravastatin on risk for coronary heart disease and mortality in older persons, stratified for plasma levels of homocysteine. Since homocysteine was shown not to be causally related to cardiovascular disease, it was unknown which preventive treatment could be offered to those with high homocysteine to reduce their cardiovascular risk. In that study, the non-causal relationship between homocysteine and effect of pravastatin was investigated. Although it is customary, a causal relation between the predictor and the predicted status is not required.

This study revealed that homocysteine may be a promising new coronary heart disease risk predictor in older people, since high plasma homocysteine not only selected older persons at high-risk for (non)fatal coronary heart disease and all-cause mortality, but also identified those with the highest absolute risk reduction by pravastatin and the lowest number needed to treat to prevent non(fatal) coronary heart disease. When the high-risk population which benefits most from cardiovascular-preventive intervention can be selected, this approach might be appropriate for the vital and vulnerable part of the older population. Since preventive cardiovascular treatment contributes to life expectancy and prevention of functional decline, it contributes to both of the aims described in this thesis: prevention of disease, and maintenance of independence and wellbeing. This research shows that, to prevent diseases, it is possible to select high-risk groups with the most benefit from preventive treatment in the general older population; however, more research is needed to develop the optimal screening and treatment strategies.

Conclusion

There is scientific support for the idea that the aim of prevention in older people is not only to prevent disease and injury, but also to maintain independence and wellbeing. Different strategies and subgroups can be identified for these aims (Figure 1). The aim to maintain independence and wellbeing seems to be appropriate for the vulnerable population. Although there is no gold standard to stratify for vulnerability in the general older population, GPs seem to share the same concept of vulnerability for somatic and psychological patient characteristics. Moreover, the variability between GPs will probably decrease further after additional training in the functional model. Perhaps there will not be one 'best' overall selection strategy for vulnerability, but perhaps selection will depend on the intended interventions. Within the vulnerable older population there is no evidence (except for physical activity) that a collective screening approach, with a standardized intervention program, will be the appropriate way to contribute to the maintenance of independence and wellbeing. This implies that the effort spent in preventive health centers for seniors will probably not be effective. Chapter 1 described that preventive health centers for seniors can be placed in the lower left quadrant of Figure 1, because they use a collective approach to maintain independence and wellbeing.^{7;34} Since the collective approach seems to be an inappropriate strategy to contribute to this aim, it is doubtful whether these health centers fulfill the purpose for which they were established. Moreover, it is questionable whether early detection and prevention of specific disorders like comorbidity, the responsibility of local authorities according to the Dutch Public Health Act, can be organized collectively with a standardized, programmatic approach. The limited budgets available for preventive care and research can probably be better spent on more promising activities, i.e. those in the upper left

and lower right quadrants. Since the majority of vulnerable older people already receive medical care for their chronic disease(s), more benefit can be expected from improving the individual regular care (in the lower right quadrant) than from a separate screening program. The ISCOPE study (a cluster-randomized controlled trial investigating the effect of pro-active care to patients with complex problems aged ≥ 75 years) explored this individualized approach among vulnerable older people. Moreover, the ‘gut feeling’ of GPs in their selection of older people for interventions to maintain independence and wellbeing needs further elucidation.

The traditional aim to prevent diseases can still be applied to the general older population, including both vital and vulnerable persons. According to GPs, the main topic in the prevention of diseases in the general older population is (apart from the national programs) cardiovascular risk management. A collective approach, consisting of high-risk stratification and treatment, appeared to be possible even at high age. Research on this type of collective approach needs to focus on prevention of diseases, not on detection of disorders which influence independence and wellbeing, because screening does not appear to be the appropriate way to contribute to independence and wellbeing. Future studies should focus on screening to prevent diseases, such as the development of high-risk stratifications in the general older population, especially for cardiovascular risk management but probably also for other programs such as cancer screening and vaccination.

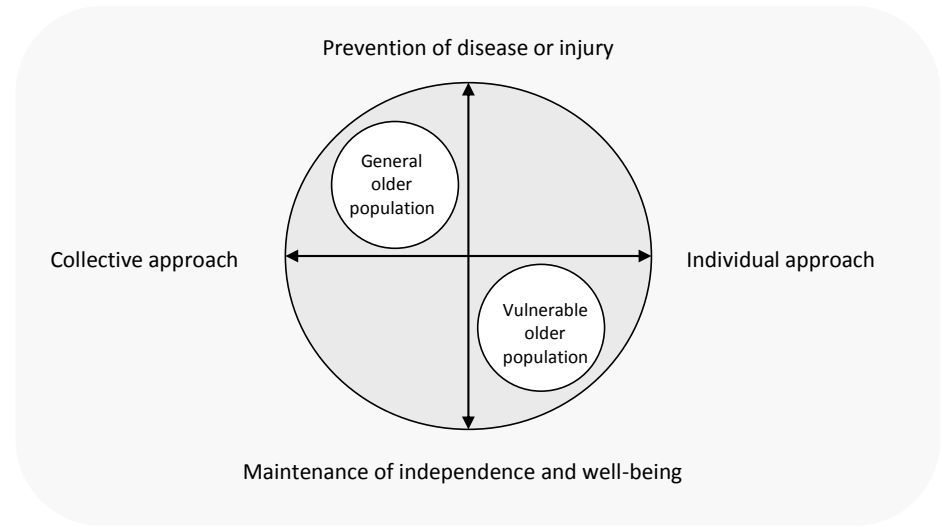


Figure 1. Aims and approaches in preventive strategies.

Finally, the work in this thesis has shown the possibility to develop subgroup specific preventive strategies for older people, stratified according to the two defined aims in prevention. To do justice to the considerable diversity in health status and vitality of older persons, a challenge for future research on the prevention of disease is to incorporate vulnerability into the risk stratification in old age.

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