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Improving care for acutely presenting older patients visiting the emergency department: the implementation of geriatric screening in routine care

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Chapter 8

General discussion

Key findings

To improve care for acutely presenting older patients visiting the ED, this thesis had the following aims: to study the association of geriatric screening parameters collected in the ED with various adverse health outcomes in different subgroups of older ED patients, and to investigate the feasibility, impact and experiences of implementing a geriatric screening program in routine ED practice. This thesis describes how geriatric screening could add to risk stratify older people in the ED and what is needed for implementation in routine ED care. There are several key findings. First, geriatric screening in the ED can be used to identify various populations of older patients at high risk for both short- and long-term adverse health outcomes. Moreover, the addition of geriatric screening to triage urgency levels has the potential to improve routinely-used urgency triage. Second, implementation of the APOP screening program in routine ED care was feasible, and resulted in an acceptable screening rate and the execution of some of the interventions for patients with high risk screening results. In addition, older patients had a positive attitude towards the use of geriatric screening in routine ED care and believed it could be of added value for older ED patients.

Using geriatric screening in the ED

Geriatric screening and adverse health outcomes

The results of this thesis show that geriatric screening can be used to identify older ED patients at high risk of various adverse health outcomes. In our studies, the APOP screener was used as a geriatric screening instrument, which is a validated instrument to predict risk for functional decline and mortality within three months for the total population of older patients presenting to the ED. It was found that the APOP screener also identifies patients at risk for the short-term outcome 30-day mortality (**chapter 2**) and for long-term outcomes such as 1-year functional decline and mortality (**chapter 4**). The use of geriatric screening at arrival in the ED, can therefore provide valuable information for care providers in the whole acute care chain. In the ED, combining geriatric screening with currently used urgency triage tools has the potential to provide a comprehensive understanding of the individual risk of poor outcomes using both disease severity and geriatric impairments, with the possibility to acquire more personalized care in acutely ill older patients as early as arrival in the ED (**chapter 2**). Additionally, atypical disease presentation, cognitive impairment and the different interpretation of vital signs in older patients can be taken into account, potentially improving triage by reducing 'undertriage' and its negative effects by delay of treatment¹⁻³. Outside the ED, for example during hospital admission, the results from geriatric screening could also aid in individualized treatment decisions to acquire more personalized care and therefore gives an opportunity to optimize outcomes for older patients. Perhaps the most important opportunity would be first, to use a comprehensive geriatric assessment (CGA), which has known positive effects on prevention of institutionalization, death, and deterioration in older patients^{4,5}. Second, the use of advance care planning would

help to establish goals and preferences for future care⁶. And finally, safe transitions between care settings should be ensured, for example, by the use of transitional care⁷. The results provided by geriatric screening in the ED are therefore useful and provide valuable information for care providers in- and outside the ED.

Perspectives of geriatric screening on a patient level

An important motivation for the use of a geriatric screening strategy is that older patients themselves have predominantly positive attitudes towards the use of screening in the ED (**chapter 7**). We were the first to study the experiences and attitudes towards geriatric screening in routine care among older ED patients. Patients who were screened with the APOP screener during their ED visit experienced screening as a normal part of ED care. From an older patient's perspective, screening could contribute to assessing patients holistically, recognizing geriatric problems early and comforting patients. The need of older people to receive holistic care and to be involved in decision-making has been described previously for the ED setting⁸, and is corresponding to literature in community-dwelling older people and older patients in regular health care⁹⁻¹². Although the term 'frailty' was often not something that patients wish to associate themselves with, because of the stereotypical images that the term evokes, the concept of identifying patients by measuring frailty to tailor care to the individual patients was well accepted. The results from this thesis might therefore influence the ongoing public debate about the use of geriatric screening in practice and might allay fears that screening leads to unintended 'ageism'¹³.

Although the use of geriatric screening in the ED is encouraged and expected to improve patient care, it is still unclear whether its use has any effect on reducing adverse outcomes in older ED patients. This thesis does not answer that question. Studying the effect of geriatric screening and CGA-driven interventions in the ED on a patient level has been shown to be very challenging and is therefore still one of the most important research topics in the field of Geriatric Emergency Medicine¹⁴⁻¹⁶. The results of this thesis (**chapter 6**) show that the implementation of the APOP screening program resulted in increased numbers of executed CGA's during hospitalization, which has known positive effects on patient outcomes^{4,5}. Other studies exploring the effects of screening and CGA interventions in the ED have shown both positive and negative results on improving patient and operational outcomes¹⁶⁻²⁰. This inconsistency in findings can be explained by the heterogeneity of multi-component programs and healthcare settings. In addition, the limited success of intervention studies may be a result of the fact that some adverse outcomes, such as ED revisits, may not be avoidable²¹. The use of CGA might even lead to a better identification of health problems, resulting in an increase of hospital use. When studying the effect of screening programs, it is therefore very challenging to select the endpoints we aim to improve. For example, mortality might not be a good endpoint because in some patients a shorter lifespan can be a good outcome if it goes hand in hand with a better quality of life²². Maybe it is best to evaluate

the effect of interventions on the patient quality of life and the appropriateness of health care service use. But still, different screening programs may include different combinations of potentially effective and ineffective components and it will be very challenging to unravel which components are truly effective. The important question to ask ourselves is whether we will stop using geriatric screening programs in future if we cannot prove the effect on a patient level, while both health care providers and patients believe that the use of programs does result in better patient care. On the one hand, one could state that the efficacy and (cost-)effectiveness should be studied before implementation of screening programs into clinical practice. On the other hand, the value of screening programs will be low if they eventually cannot be implemented in routine care successfully²³. And without evaluation of implementation it will remain unclear whether any effects found can be attributed to the true effectiveness of the intervention or to the success of implementation. That is why the second part of this thesis focuses on the implementation of geriatric screening in routine ED care.

Implementation of geriatric screening in routine ED care

Feasibility of screening in the ED

Implementation – the act of carrying an intention into effect – can be explored within implementation research which aims to understand what, why, and how interventions work in “real world” settings and to test approaches to improve them²⁴. Implementation outcomes such as acceptability, adoption, feasibility, fidelity and sustainability can all serve as indicators of the success of implementation²⁵. Because these implementation outcomes are largely unclear for the use of geriatric screening in the challenging and fast-paced environment of everyday ED practice²⁶, we studied the feasibility and acceptability of implementing geriatric screening in routine ED care (**chapter 5**). The APOP screener was incorporated in the routine care process after ED triage in the LUMC and was evaluated shortly after implementation. It was found that geriatric screening was feasible and could be completed in approximately 60% of all older ED patients. Moreover, screening was accepted by the users (ED triage nurses) who found it important and useful. In line with previous studies, the 2-minute time to complete the APOP screener was one of the facilitators of screening^{26;27}. Another important facilitator was the incorporation in the electronic health records, making screening a part of routine care procedures. Organizational factors like ‘the ED was too busy’ were the most important barriers of screening execution. The discovered facilitators and barriers of screening execution were evaluated only shortly after implementation. Future cycles of improvement are needed to further improve screening execution and to evaluate long-term sustainability.

Implementing interventions after screening

Because screening alone only identifies high risk patients, a two-step approach is encouraged with geriatric screening as a first step, followed by targeted interventions

according to the principles of CGA²⁸. That is why, within the APOP study, we implemented and evaluated not only the APOP screener, but also interventions for high risk screened patients in routine care (**chapter 6**). In a relatively short time period, it was found that interventions for high risk patients in the ED were partly adhered to. Outside the ED, implementation of the program resulted in increased numbers of executed CGA's during hospitalization. The implementation of the APOP screening program therefore resulted in improved execution of some individual interventions for older patients, but not all interventions improved after implementation compared to before. This raises some questions. First, did we evaluate implementation properly? Our implementation strategy was guided by the well-known Plan-Do-Study-Act (PDSA) model for quality improvement²⁹, and we used real-time observations of the execution of interventions in a routine care setting. However, small improvements in compliance with interventions in high risk patients might have been missed, since we could only compare compliance with interventions on the level of total group older ED patients in the 'before' and 'after' implementation period. In addition, we evaluated the compliance with interventions only in a period of two months shortly after implementation. Therefore, more measurements should follow in the future, guided by recurring PDSA-cycles, to further improve the screening rate and the execution of interventions in our hospital in future. A second question that the results from this thesis evoke is: did we chose the right interventions? The interventions of the APOP screening program include elements of CGA and were based on recommendations from international geriatric emergency medicine guidelines and quality indicators^{30,31}. From the recommendations in international literature, we selected interventions which were practicable to implement in routine care in the Dutch ED setting. In addition, we also selected interventions based on project-team experience and input from focus groups with patient representatives and general practitioners. There is no evidence yet whether these interventions improve outcomes for older patients²⁰, except for a complete CGA, which was executed more often during hospitalization after implementation of our screening program. International quality indicators, for now, are the best guidelines we have to select interventions. In future, more focus should lie on international collaborations to improve and expand guidelines and quality indicators, for example by generating guidelines more specific for the European setting³².

Choosing a screening instrument for the ED setting

In the last years, geriatric emergency medicine research focused mostly on the question which screening instrument should be used based on its predictive value. Numerous screening instruments have been developed and new prediction models keep emerging, yet the discussion which tool is best to use continues¹⁴. Some state that the existing instruments still do not accurately enough distinguish high- or low-risk patients and therefore should not be used in practice, while others raise the question whether it will be possible to develop better tools because ageing in essence is chaotic and unpredictable³³. While we continue to develop more accurate geriatric screening

instruments, we simultaneously should focus more on implementation and effectiveness research. Evaluating implementation of screening tools in routine ED care may help us answer the question which tool is most suitable for which healthcare system or hospital. In our research we used the APOP screener, which might be best suitable tool for the Dutch ED setting, because it has been developed, validated, implemented and evaluated in this setting³⁴. The generalizability of the APOP screener in different settings or countries, however, has not been studied. It might very well be that a different tool works better in a different country, for example due to another selection of older patients who visit the ED. The comparison between screening instruments remains challenging due to these differences in settings.

Moreover, a recent study evaluated the quality and usability of four geriatric screening instruments among healthcare professionals in the ED and investigate the added value of clinical judgment³⁵. It was found that the clinical judgment of health-care professionals has the potential to improve screening further due to its high Negative Predictive Value, especially when combined with a screening tool which has a high Positive Predictive Value (i.e. the APOP screener). Although clinical judgment is subjective and does not have a fixed outcome like screening tools, it is very sensitive for the detection of frailty and could therefore be of added value when used next to a screening tool.

Finally, another challenge in the comparison between instruments is the fact that they all measure different things. Some tools measure frailty, although no consensus exists regarding the definition of frailty, making it unclear whether frailty tools all measure the same 'frailty'³⁶. Other tools are designed as risk stratification instruments, measuring risk on various adverse outcomes at various moments in time after an ED visit, i.e. hospitalization, functional decline and ED revisits. The APOP screener is a risk stratification instrument which identifies older patients at risk for 90-day functional decline and/or mortality, and therefore it is not a frailty screener *pur sang*. However, since frailty is defined, among other things, by an increased risk on adverse health outcomes³⁷, one might state that instruments that identify patients at high risk of adverse health outcomes, identify the same patients as frailty tools. The identified 'high risk' according to risk stratification tools could therefore be used as a proxy for 'frailty'.

In conclusion, there is no perfect screening instrument, so when choosing the most suitable geriatric screening instrument for an ED setting one should evaluate: 1) what the instrument measures, 2) in which setting it was developed and validated, 3) how it performs regarding predictive value, 4) and whether the feasible use in practice is evaluated.

Future steps towards broader implementation

Implementation in different ED settings

Although the results of this thesis are very promising, it is important to keep in mind that our research focused on the implementation of one screening instrument (the APOP screener) in one particular setting (a Dutch academic hospital). The success and effects of implementation are very much dependent on the context: the healthcare system, the institutional setting, the care providers, the characteristics of patients and so on. More research will be needed to investigate implementation in different hospitals and ED settings to generate guidance on how geriatric screening tools can be successfully implemented on a wide scale. Recurring cycles of evaluation and improvements will play a central role in achieving successful implementation. The evaluation of implementation with a comparison across steps, components and settings could be operationalized within a stepped-wedge cluster randomized controlled trial³⁸.

To share our experiences and knowledge with other Dutch hospitals, the APOP project team wrote a practical handbook about the development and implementation of the APOP screening program³⁹. The fact that the APOP screener recently has been implemented in the electronic health records (HiX, Chipsoft) used by approximately half of all Dutch hospitals and has been put into routine use by several EDs throughout the Netherlands is very promising. However, a one-size-fits-all screening program does not exist and an important first step before implementing a screening program and interventions for other EDs is to unravel the setting and find out the possibilities for interventions in the ED considering time, available personnel, patient numbers and ED environment.

Interdisciplinary collaboration

Finally, the ED is only one part of the acute care chain. To improve patient care we will need to work together with all health care providers involved during the acute care episode of an older patient. Collaboration with other care providers is essential, both inside the hospital (i.e. acute care nurses and doctors, geriatricians and physiotherapists) and outside the hospital (i.e. general practitioners and nursing home staff). Due to a patient's relatively short length of stay in the ED, interventions will usually have to be executed outside the ED, which makes the transfer of information to other care providers of utmost importance²⁰. But also the patient's stay in the ED can be improved by focusing on safety, comfort, mobility, memory cues and sensorial perception³⁰. In order to improve the outcomes of older ED patients, further attention should be paid to collaboration, both in practice as in science. A one-size-fits-all screening program does not exist, but by implementing and evaluating different screening programs in different ED settings we can still learn from each other. The experiences with the development and implementation of the APOP screening program in routine ED care can be very

useful for other hospitals to generate guidance on how geriatric screening tools can be successfully implemented.

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