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Proactive care programs in the emergency department: effectiveness and feasibility

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Citation

Loon, M. van. (2023, April 13). *Proactive care programs in the emergency department: effectiveness and feasibility*. Retrieved from https://hdl.handle.net/1887/3593961

Version:	Publisher's Version
License:	Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden
Downloaded from:	https://hdl.handle.net/1887/3593961

Note: To cite this publication please use the final published version (if applicable).

CHAPTER 7

General discussion

SUMMARY OF THE MAIN FINDINGS

In this thesis, we evaluated the effectiveness and feasibility of two proactive care programs in a large Dutch inner-city ED to contribute to optimization of ED care.

In the first part (**chapter 2 and 3**), we evaluated a program focusing on screening and intervention for hazardous alcohol use in ED patients. In **chapter 2**, the implementation and effect of routine screening and intervention for hazardous alcohol use on alcohol consumption in adult ED patients were examined. During the one-year study period, approximately half of the ED patients were screened during triage, using the AUDIT-C. Of them, 10% had an elevated AUDIT-C score of whom less than half received an intervention from an ED nurse or physician: most patients received an educational leaflet and about a third received both an educational leaflet and a brief, motivational intervention. In the subset of patients with an elevated AUDIT-C score available for follow-up, a third either reduced or stopped their alcohol use. Risk factors for hazardous alcohol use were male sex, alcohol-related ED visit, any form of intoxication, head injury, gastro-intestinal bleeding and a wound. In **chapter 3**, screening failures were examined. In this study, only the first ED visit of each patient during the study period was included. We found that two-thirds of the ED patients was screened for hazardous alcohol use. Of the unscreened patients, the majority were not screened for staff-related reasons and only a quarter for patient-related reasons, (i.e., refusal or not being able to cooperate). Strikingly, patients with risk factors for hazardous alcohol use were less often screened than patients without risk factors.

In the second part of this thesis (**chapter 4, 5** and **6**), we examined the effect of post ED discharge telephone follow-up for community-dwelling older adults on health-related outcomes. In a systematic literature review, with a limited number of high-quality studies available (**chapter 4**), we found no benefits of telephone follow-up on health services utilization and discharge plan adherence, compared to control interventions. Subsequently, we conducted a large pragmatic randomized controlled trial, presented in **chapter 5**, in which patients received either a telephone follow-up call (after an ED visit in odd months; intervention group) or a satisfaction survey call (after an ED visit in even months; control group). Due to shortage of staff, many eligible patients were not called. Furthermore, about a third could not be reached by telephone. Finally, only about a third of the eligible patients consented to participate.

In the trial, we found no statistically significant difference in the rate of unplanned 30-day hospitalization and/or ED return visits between patients in the intervention group and the control group. Additionally, the intervention showed no beneficial effect within the subgroups (divided by age, sex, living condition, and degree of crowding in the ED at discharge).

To understand why many post-ED discharge interventions fail to reduce ED return visits, we analyzed patient and index ED visit characteristics and reasons for unplanned ED return visits of control group patients in **chapter 6**. Of the study patients, 13% had at least one unplanned ED return visit within 30 days after ED discharge. Several patient and ED visit characteristics were found to be associated with unplanned ED return visits. Of the patients with an unplanned ED return visit, the majority returned for medical reasons, being problems related to the same illness of the index ED visit, or a new complaint, whereas returns for patient-related reasons were less common. In addition, patients with three or more unplanned ED return visits most often returned for problems related to the same illness of the index ED visit. The limited number of patient-related reasons for unplanned ED return visits may explain why transitional care programs that focus on patient education and post-discharge support, like telephone follow-up, are ineffective in reducing unplanned ED return visits.

In conclusion, none of the proactive care programs in the ED were effective. Moreover, feasibility of the programs in the ED was limited, as many eligible patients were not reached, due to both staff-related and patient-related reasons.

METHODOLOGICAL CONSIDERATIONS

Strengths

In the set-up of our programs, we followed conceptual models of implementation of healthcare innovations and examples of other successful intervention programs.[1-5]

Pragmatic study design

An important strength is that both programs were integrated into the daily routine of the ED staff. With this approach, we aimed for the programs to be low-threshold, easy to apply and available 24/7. During the study periods, no additional personnel (e.g., research nurses) were deployed to conduct the interventions. This pragmatic study design, reflecting the current ED practice, made it easier to assess not only the effectiveness but also the feasibility of the interventions in the daily practice of the ED.

Another strength was the representation of a wide range of professionals in the coordinating project teams (e.g., ED nurses, an addiction healthcare worker, an EP, an epidemiologist, a psychiatrist and a gastroenterologist). These multidisciplinary project teams established the study procedures and trained all nurses involved in the studies on these procedures and on how to perform the interventions. In the alcohol screening and intervention program, low-threshold referral appointments were made with the addiction treatment center in the city.

For both projects, the questionnaires were integrated in the electronic hospital system (EHS). The patients' answers could be entered directly into the EHS, ensuring secure data storage. For project evaluation, data were abstracted from the EHS by information technology specialists who were not involved in the studies, which prevented potential confirmation bias.

Well-defined study populations

For both programs, the target population was clearly defined. In the alcohol project, a screening instrument (AUDIT-C) that was validated for ED settings was used to detect patients with hazardous alcohol use. Cut-off values defining a positive screening result were determined, based on validation studies on the screening instrument and studies examining the effectiveness of motivational interventions.[6-9] In the telephone follow-up program, patients aged 70 years and older who were discharged home were asked about their living circumstances during their ED visit to determine whether they were eligible for the program.

Limitations

The limitations of the individual studies included in this thesis, have been discussed in the accompanying chapters. The most important limitations are highlighted here.

Controlled studies

The alcohol screening and intervention program was not set up as a controlled clinical trial. Hence, AUDIT-C scores of patients who had received an intervention were not compared with AUDIT-C scores of patients in a planned control group who did not receive an intervention. However, it has been argued that even controlled clinical trials may not be appropriate for evaluating complex interventions, such as motivational interventions; a motivational intervention can be viewed as a complex mix of uncontrollable, independent variables embedded in what is more of a social conversation than a specific treatment. In other words, the success of motivational interventions may depend on many factors, such as the ability to build a relationship with the patient, the patient's perceived need for care, past experiences with healthcare, etc. Even with a controlled trial, the influence of these factors on the effect of the intervention is difficult to measure. Therefore, a negative study result does not always mean that the study is ineffective.[10] On the other hand, the telephone follow-up study was designed as a pragmatic randomized controlled trial. Semi-structured questionnaires were used to limit inter-individual variations in communication between ED nurses.

Many eligible patients did not receive an intervention

According to the protocol, all patients with a positive AUDIT-C score would be offered a leaflet and a motivational intervention. However, many patients received none or only one of the interventions. Unfortunately, ED staff generally did not provide an

explanation in the patients' emergency medical records why they choose to perform only one specific intervention or why they decided to leave out an intervention. It is possible that ED staff did not perform the interventions randomly, which may have led to bias.

In the telephone follow-up study, only one third of the eligible patients received a telephone intervention, because many patients were not called by ED staff or could not be reached by telephone. However, the fact that baseline characteristics of the patients who were contacted did not differ from those of patients who were not contacted, suggests that this did not lead to extensive selection bias. For the telephone follow-up study, the calculated sample size was not obtained. With only 77% of the required sample size, the results tended to show a negative effect of the intervention. Therefore, it is not likely that we would have demonstrated a benefit of the intervention with the required sample size.

Limited response at follow-up

In the alcohol screening and intervention study, only a subset of patients with a positive AUDIT-C score was able and willing to cooperate with follow-up. Cooperating patients were more often female and of older age than patients who did not cooperate. As patients were asked again about their alcohol use at follow-up, it is possible that patients who did not reduce their alcohol use refused to cooperate or gave a socially desirable response. As patients were counseled to reduce their alcohol consumption, follow-up questioning on this topic may have resulted in response bias. Therefore, the positive results of the interventions found in this study should be interpreted with some caution.

CLINICAL IMPLICATIONS

Target group patients and their receptivity to interventions in the ED

Each of the proactive care programs described in this thesis was aimed at a patient group that is at an increased risk for adverse events and unplanned ED return. The presence of these patients in the ED contributes to ED crowding, due to the extra attention they require from ED staff and their frequently longer lengths of ED stay.[11-13] We hypothesized that the programs would reduce the number of ED return visits of these patients and could therefore be beneficial for both the patients and the level of crowding in the ED.

Both studies, however, showed no beneficial effects of the interventions. Moreover, many eligible patients did not receive an intervention. This was mainly due to staff-related reasons, although a substantial number of patients turned out not to be receptive for the intervention, because they were not able or willing to cooperate

(**chapter 3**), or could not be reached by telephone (**chapter 4** and **5**). While patients in the ED may be open to education and initiation of further support, they may also be distracted by pain, stress, or discomfort, or influenced by medications or intoxications.[12,14-16] As a result, many patients may not be receptive to educational or motivational interventions in the ED. Several studies have reported that trials that took place in the ED showed less impact than trials based in other settings, like the general practice, a hospital ward or in the community.[9,17] Therefore, educational and motivational interventions should preferably be performed in these settings, as there is more time to assess the patient and the opportunity to create a confidential, quiet and private setting which may facilitate the conversation.[4,17]

In the telephone follow-up program, patients received the telephone intervention after discharge from the ED. However, the finding that a third of the eligible patients could not be reached by telephone suggests that the telephone is not a suitable medium for interventions for all older adults. Moreover, the finding in **chapter 6** that most patients return to the ED for medical and not for patient-related reasons indicates that lack of education and support does not play a major role in unplanned return to the ED.

ED staff-related impeding factors for conduction of interventions

The finding that in both programs many eligible patients did not receive an intervention for staff-related reasons suggests that the conduction of educational and motivational interventions by ED staff was not feasible in the ED, even when carefully planned during off-peak hours. It is likely that the continuous time pressure that ED staff experience and the need to give priority to medically urgent issues were the most important reasons why the interventions were not performed. Other barriers, mentioned in the literature concerning the implementation of alcohol screening programs, are the uncomfortable nature of the topic, doubt about conversation skills and not feeling responsible for the conduction of the interventions.[3,18-21]

Considerations regarding continuation of interventions by ED staff

Considering the aforementioned findings, it is questionable whether these proactive care programs are worth the invested time, costs, and efforts. Due to the widespread shortage of ED nurses and increased crowding in the ED, ED staff work under continuous time pressure. The interventions of the programs described in this thesis increase the work burden for these professionals as they are time consuming, require special skills, repeat training, dedication and preparedness to overcome barriers.[22] Moreover, it is possible that an ED professional who is working under time pressure will provide a suboptimal intervention, which may be less effective and could even be harmful for the patient involved, for example if it results in feelings of stigmatization.[22,23] Based on the criteria for appraising the validity of a screening program by Wilson and Jungner,[24] continuing these proactive care programs routinely

in all target group patients cannot be justified if the interventions are not effective in patients identified by screening. In contrast, it is valuable to educate ED staff about patients at risk and how to detect them. In addition, by providing staff with tools to initiate a dialogue, they will be able to offer assistance when they feel it is necessary and appropriate.[22]

FUTURE CLINICAL AND RESEARCH PERSPECTIVES

Considering the complicated social situation of many patients with hazardous alcohol use and the multiple health problems of older adults with unplanned ED return visits, it may not be realistic to expect that their situation would be improved by a single intervention in the ED. Societal and community-based programs and cross-organizational cooperation within healthcare organizations are likely to be more effective.

Possible interventions outside the ED

Societal programs and governmental interventions

Education and campaigns about risks of alcohol use could influence social norms on alcohol consumption. Interventions initiated by the government that limit the availability of alcoholic beverages and prohibit alcohol consumption in specific circumstances may also be effective. Examples are the ban on the serving of alcohol on airplanes and in sports club canteens, prohibiting the sale of alcohol in supermarkets, and drink-driving penalties. Increasing taxes on and prices of alcoholic beverages and banning commercials may also be of benefit.[25] Several of these measures are included in the National Prevention Agreement (Nationaal Preventieakkoord) that was composed in 2018. Apart from governmental measures, this National Prevention Agreement contains arrangements from more than 70 organizations, including the healthcare sector, business community and educational organizations, in order to reduce and prevent smoking, obesity and problematic alcohol use.[26]

More governmental investments in healthcare, specifically for regular primary, geriatric, and psychiatric care to increase capacity and personnel, would improve a number of issues.

Governmental education campaigns that point out to citizens that care outside office hours is only intended for acute health problems may reduce pressure on the acute healthcare system. These campaigns can refer to applications and websites that help people assess whether their complaint is urgent and can provide self-management advice. Strengthening self-management skills appears to be especially useful in reducing the number of ED visits in older adults. When older adults have more

control over their illnesses, they may better recognize possible deterioration and can anticipate the associated problems.[27,28]

Cross-organizational cooperation

Collaboration between organizations can also be effective in reducing adverse events for patients at risk. An example is the development of multidisciplinary Alcohol Care Teams (ACTs) that offer integrated alcohol treatment pathways across primary, secondary and community care. These ACTs are mainly developed in acute hospitals in the United Kingdom and have shown to reduce acute hospital admissions, readmissions and mortality, but also improve the quality and efficiency of care for patients with hazardous alcohol use.[29] Despite the positive results of the ACT programs, maintenance and further development of these programs are a challenge, due to budget cuts and shortage of sufficiently trained addiction and social workers.[29]

Better detection of patients with risky drinking patterns could also be achieved by creating more awareness among clinicians in general about the limits for responsible alcohol consumption and harmful physical and mental health consequences of hazardous alcohol use. Referral agreements with addiction treatment centers or deployment of addiction workers in lifestyle outpatient clinics, which are initiated in an increasing number of hospitals, will facilitate low-threshold referral to specialists who can provide specific guidance and treatment. Unfortunately, since there is currently a widespread shortage in all branches of healthcare, it must be carefully considered whether transferring a health care worker to another location provides more health benefits for the entire target population.

In a Scottish model, cooperation between primary care, hospital care and community services reduced the rate of emergency admissions of older adults.[30] This program illustrates that interventions that involve more organizations within the healthcare system, and not only the ED, are more likely to decrease the pressure on the ED.

However, since many older adults have multiple health problems and mostly return to the ED for medical reasons,[27,31] ED return visits in this patient population may be difficult to prevent. Reduction of the number of unplanned ED return visits in these older adults may be achieved if the necessary care can be provided at another location outside the ED, for instance in an acute geriatric community hospital.[27,32] However, striving for a reduction in ED return visit rate without collaboration with other organizations that can ensure the patient's chronic care or provide acute care facilities elsewhere, does not seem realistic and may even be dangerous. Dutch examples of such collaborations are the "Draaideur" project for older adults who visit the ED after a fall, and "Pallisupport", a collaboration project between transmural palliative care teams and primary and hospital care organizations, aimed at older adults with palliative care needs.[27]

Future proactive care programs in the ED

The described proactive care programs in the ED highlight important points of consideration when developing new programs in the ED:

Determine aim of the programs, outcome measures and target group patients

Outcome measures of the programs should be well-defined and suitable. For instance, programs that focus on procedures in the ED that could have a direct reducing effect on crowding may be suitable. An example is the lean-driven radiology project in which bottlenecks throughout the imaging process at the ED were identified, and several lean strategies were implemented.[33] Programs focusing on specific patient groups to reduce their ED length of stay and to improve their comfort in the ED may also be feasible. Examples are the acutely presenting older patient (APOP) screening program,[34,35] and the presence of an acute psychiatric intervention team in the ED.[13] By focusing on a specific patient group, this group should be well detectable, e.g., with a short, validated screening instrument, and likely to respond well to the offered intervention. For these screening programs, the Wilson and Jungner criteria should also be taken into account.[24]

Consider the feasibility

When defining the goals of the programs, their feasibility must be carefully considered. Due to the increased pressure on acute healthcare in the last decade, it is important that the patients' ED length of stay is as short as possible in order to retain enough capacity for all patients who need acute care. Therefore, performing interventions in the ED that are not necessary in the acute setting are undesirable.

Consider enabling factors

Factors that are likely to enable the implementation of new proactive care programs are the composition of a multidisciplinary project team, involvement of the information technology department, adequate funding to cover implementation costs, and additional resources and personnel. In a project team in which all involved professionals and organizations are represented, it is more likely that the project procedures will be feasible for the executing staff. Moreover, it will improve collaboration between departments and facilitate referral of patients. Ongoing education of executing staff, motivation by physician and nurse "champions" and providing regular performance feedback are crucial to keep staff skilled and motivated.[1-5,18]

Implications for future research and policy

Due to the increased pressure on the Dutch healthcare system in general and on acute healthcare in particular, there is an ongoing need to optimize the organization and quality of care in the ED. Objective scientific data is needed for informed future policy

choices. Therefore, more research concerning ED processes and the characteristics of ED patients, particularly in Dutch EDs, is needed.[36]

The results of the two programs in this thesis emphasize the importance of scientific evaluation of processes and interventions in the ED, including those that appear favorable. This is illustrated by the fact that the interventions, examined in our projects, are recommended in several guidelines,[37,38] while their effectiveness has not been clearly demonstrated.[9,39-41]

CONCLUSION

In this thesis, we evaluated two proactive care programs, targeting two groups of ED patients who are at high risk of adverse outcomes. We found that the interventions provided no clear benefit to the patients, nor to the ED. Moreover, feasibility of the programs was limited, as many eligible patients were not reached, due to both staff-related and patient-related reasons. When developing new proactive care programs in the ED, the objectives, target groups and feasibility must be carefully considered. Detection of patients may be feasible in the ED, but given the current pressure on the ED, interventions should be performed at a later stage outside the ED, if possible. This requires good collaboration between the involved organizations. Better coordination of care for patients at risk could be the key to improving the quality of care and well-being of these patients and could also contribute to reducing the pressure on emergency care. However, this thesis demonstrates the importance of scientific evaluation of future programs prior to their implementation as routine care.

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