Proactive care programs in the emergency department: effectiveness and feasibility

Loon, M. van

CHAPTER 1

| General introduction

The Emergency Department (ED) is a unique place, visited by a broad variety of people of all ages when they experience an acute health problem. In the ED, acute health problems may be due to an acute illness or accident in otherwise healthy individuals, but can also be caused by a known condition or an accumulation of multiple health problems. Patients visiting the ED may be referred by their general practitioner or a medical specialist, brought in by an ambulance, or patients visit the ED on their own initiative. However, most visits are typically unscheduled. In the ED, treatments are often initiated to first stabilize the patient's health situation, and diagnostic procedures are primarily aimed at finding the cause of the disease. Treatment in the ED is usually reactive care, as it is provided in response to an acute health problem, and usually not aimed at treating a disease over the longer term.

An ED visit may have a large impact on patients as their situation is often acute and severe. Under these circumstances, patients are generally receptive to help and education. Moreover, if the ED visit is a result of the consequences of their behavior, patients may be more open to seeing the connection with the medical consequences.[1-3] Therefore, the ED is potentially an excellent setting for the detection of hazardous behavior, such as excessive alcohol consumption, or other health problems, e.g., repeated falls in older adults. In addition, the ED can also be a suitable setting for patient education and starting support.[4]

Proactive care programs for specific patient groups in the ED

In several countries, many EDs offer proactive care programs. In contrast to reactive care, where action is taken if the patient presents with a health problem, the aim of proactive care programs is to actively identify patients at risk and to subsequently offer these patients additional care to improve their situation.

Within existing care, proactive care programs generally target specific patient groups, with each program serving a specific goal, such as reducing unplanned ED return visits or referral to specialist treatment after ED discharge. Proactive care programs usually include a screening tool to detect target patient groups. Subsequently, these patients are offered one or more interventions, which can be performed by trained ED staff, by specialized professionals in the ED, or by other professionals at a later stage in the outpatient setting. International examples of proactive care programs in the ED are pharmacist-led discharge medication counselling to improve patient satisfaction and length of ED stay, and to reduce ED-representations;[5] suicide risk screening and brief interventions to reduce suicidal behavior;[6] and a fall prevention program for older ED patients presenting with a fall.[7]

Until recently, proactive care programs were uncommon in Dutch EDs. One important reason for this is the good accessibility of primary care in The Netherlands. Patients usually have a long-term relationship with their general practitioner, who takes

preventive measures when indicated and ensures regular follow-up. However, people who suffer from an underlying psychiatric or cognitive problem often avoid the health care system and do not present to their general practitioner.[8-10] For these patients, an ED visit provides a "window of opportunity" to signal these problems, provide education, and start support. Therefore, an increasing number of Dutch EDs have started proactive care programs in the last decade. Other reasons for starting proactive care programs are the changes in the Dutch healthcare system and in the characteristics of patients visiting the ED.

Changes in the Dutch healthcare system and in the organization of Dutch EDs

Less and larger EDs

In the last decade, the Dutch ED-landscape has changed. The number of EDs was reduced gradually from 105 in 2010 to 83 in 2020 because of hospital mergers or closures.[11-13] The aim of concentrating emergency care in a smaller number of EDs was to reduce costs and increase the quality of ED care.[11] The remaining EDs increased in scale, receiving more patients and operating with more ED staff. Unfortunately, the reduction in the number of EDs did not reduce the total number of ED visits, nor did it reduce the pressure on the acute care system.[11] A particularly growing problem concerns crowding in the ED, meaning that the remaining EDs have become excessively busy.[14,15] Crowding is associated with negative consequences, including delayed patient care and poorer outcomes for patients.[16-18]

Increased professionalization of ED staff

Until a few decades ago, EDs were staffed by one or more non-specialized nurses and house staff resident physicians.[19] From 1992 onwards, EDs gradually became increasingly staffed by trained ED nurses. However, the treating physicians in the ED remained junior doctors on rotation with little clinical experience and without formal training in emergency medicine. In 2000, four teaching hospitals started the first emergency medicine training program in The Netherlands.[20-23] Since 2008 a uniform, nationwide, emergency medicine medical training program has been in place. In 2017, 85% of the Dutch EDs were staffed with trained and registered emergency physicians (EPs).[20,23] This permanent, well-educated staff ensures continuity of the work processes in the ED.

Increase of quality standards in the ED

An increasing number of guidelines and quality standards set by health care authorities and professional medical associations, such as the Health and Youth Care Inspectorate and the Royal Dutch Medical Association, emphasize early awareness of specific diseases and health problems in the acute care setting. Examples of mandatory checklists in the ED are screening instruments to detect child

maltreatment,[24,25] and delirium in older adults needing hospitalization.[26] In addition to checklists, guidelines from professional medical associations have been published on how to detect or rule out specific diseases in the acute setting. Many of these guidelines advise complex but often time-consuming diagnostic investigations, like CT-and MRI-scans.[27]

Changes in characteristics of patients visiting Dutch EDs

More seriously ill patients

Until the 1990s, between 40% and 80% of all patients presented to the ED on their own initiative (self-referrals).[22] They were mostly young men with minor traumas, of whom only 4% needed hospital admission. From 2000 onwards, acute care provided by general practitioners has become organized nationally in joint ventures, the so-called General Practitioners Cooperatives (GPCs). Cooperation between GPCs and EDs has increased over the last ten years. Self-referrals were more often redirected to the GPCs instead of directly treated in the EDs.[22,28] At the same time, patients in the ED were more often referred by the general practitioner or the associated GPC, or came by ambulance. The number of hospital admissions from the ED increased and was 32% in 2019.[13] These findings suggest that patients currently visit the ED with more serious medical problems.[11,29,30]

More older patients

In the Netherlands, the proportion of patients aged 65 years and older in the ED increased from 29% in 2013 to 33% in 2016 and is still rising.[12,13,30] This increase is due to demographic changes and the increasing number of older adults with one or more chronic diseases.[31-33] In addition, the in 2015 implemented stay-at-home policy of the Dutch government has led to increased utilization of the ED by older adults.[12,34-37] This policy supports older patients living at home longer[38] and has resulted in an increase in the number of frail older persons living in the community. At home, the health of older patients is less likely to be adequately monitored than in an assisted living environment, and therefore health deterioration may not be noticed and picked up until a later stage. As a result, a relatively minor medical problem can trigger a disbalance in the at home situation, making an ED visit necessary.

More patients with mental health problems and intoxications

Due to budget cuts, staff shortages, increased social and economic stressors and reduction of psychiatric beds, waiting lists for patients with mental health problems have grown.[39] This is reflected in the increasing number of patients with acute psychiatric problems presenting to the ED.[39]

There has also been a steady increase in patients presenting to the ED with alcohol or drugs intoxications in the last decade.[40,41] Although these patients represent a small proportion of the ED population in The Netherlands, they put a high burden of care on ED staff, and their often maladaptive behavior may result in countertransference phenomena and stigmatization.[42,43] In addition, these patients often present outside office hours when the ED has fewer staff.

In conclusion, Dutch EDs have increased in capacity, and receive more patients with complex and serious medical problems, older adults and patients with mental health problems and intoxications. These patients require more diagnostic investigations and more care and competence from ED staff. All of these changes contribute to ED crowding. The implementation of proactive care programs may improve the quality of care for target patient groups, facilitate patient flow, reduce hospital returns by initiation of follow-up care and may therefore contribute to a reduction of ED crowding. The development of proactive care programs is stimulated by the government by introducing mandatory checklists for specific patient groups and by establishing quality indicators. The permanent staff in the ED can facilitate the implementation of proactive care programs.

AIM OF THESIS

The overall aim of this thesis is to contribute to optimization of ED care by evaluating the effectiveness and the feasibility of two pro-active care programs in the ED.

Proactive care programs in the EDs of Haaglanden Medical Center

In this thesis two proactive care programs that were implemented in the ED of the Haaglanden Medical Center (HMC) are evaluated.

HMC is located in The Hague, a seaside city in The Netherlands, with more than 500,000 inhabitants. HMC delivers care at three locations: Antoniushove, Bronovo and Westeinde. Acute care was gradually centralized from three EDs in 2017 into one in 2019. The remaining 34-bed ED is located at the Westeinde hospital in the city center. It serves as a regional level I trauma and acute neurovascular center, has an annual census of approximately 54,000 patients, and a 29% admission rate. The usual staffing includes emergency physicians (EPs), EP residents and residents of Cardiology, Neurology, Surgery and Internal Medicine 24 hours per day, seven days per week. The total nursing staff consists of approximately 80 nurses, being certified emergency nurses (CEN) (75%), nurse practitioners (5%) and registered nurses in training for CEN (20%).

The ED of HMC is located in an area where many individuals of lower socio-economic status live, and a substantial number of people have no permanent address. In addition, there is a considerable number of immigrants. In particular undocumented immigrants often have neither insurance nor a general practitioner. Therefore, they often remain undetected by health care providers.

Because of its unique position in a large inner-city hospital, the ED of HMC has frequently been a pilot department for proactive care programs during the last decade. Most programs were designed by members of the ED staff themselves, often adopted from programs in foreign EDs, and started from a need to provide better quality of care for a specific patient group. Examples are a program for detection of child maltreatment, based on parental characteristics,[44,45] and a follow-up program for patients visiting the ED after a suicide attempt.[46] The programs were initially not set up as scientific programs (e.g., clinical trials or case-control studies). For some of these programs, (temporary) external financial funding for implementation was obtained. The procedures of the programs were all conducted by the ED staff and incorporated into daily practice, making them low-threshold, easy to apply and 24/7 available.

Outline of this thesis

Part one focuses on the effectiveness and feasibility of a screening and intervention program for hazardous alcohol use in a Dutch inner-city ED. In **chapter 2**, we examine whether screening and intervention for hazardous alcohol use in ED patients results in a reduction of alcohol consumption in the three months after the ED visit. Moreover, we explore which factors are associated with hazardous alcohol use in ED patients. In **chapter 3**, we investigate whether patient-and staff-related factors are associated with screening failures and explore whether patients with risk factors for hazardous alcohol use are reached with screening. This study provides insight into the feasibility of the screening program in the ED.

Part two focuses on the effectiveness and feasibility of telephone follow-up for community-dwelling older adults after ED discharge on health-related outcomes. In **chapter 4**, we present a systematic review on studies examining the effect of telephone follow-up for older patients, discharged home from the ED on health-related outcomes. In **chapter 5** we present a pragmatic randomized controlled trial, examining the effect of telephone follow-up after ED discharge for older adults on unplanned hospital returns. In this study, we also explore the effect of the intervention in several subgroups of patients. The pragmatic study design enables us to evaluate the feasibility of this intervention in the ED. In **chapter 6,** we analyze patient- and ED visit characteristics and reasons for unplanned ED return visits of older adults, in order to investigate whether proactive care programs for older adults are sufficiently attuned to the reasons why they return to the ED. In **chapter 7**, the main

findings of the studies are summarized, and elaboration of their impact is provided. Following the general aim of this thesis, future perspectives are discussed, including recommendations for clinical practice and future programs, not only focused on the ED setting, but also on healthcare in general.

The final two chapters include a summary of the findings of this thesis, in English in **chapter 8** and in Dutch in **chapter 9**.

REFERENCES

1. Longabaugh R, Minugh PA, Nirenberg TD, Clifford PR, Becker B, Woolard R. Injury as a motivator to reduce drinking. Acad Emerg Med. 1995;2:817-825.

2. Sommers MS, Lyons MS, Fargo JD, et al. Emergency department-based brief intervention to reduce risky driving and hazardous/harmful drinking in young adults: a randomized controlled trial. Alcohol Clin Exp Res 2013;37:1753-1762.

3. Apodaca TR, Schermer CR. Readiness to change alcohol use after trauma. J Trauma 2003;54:990-994.

4. Fletcher A. Alcohol screening in emergency departments. Emerg Nurse 2004;12:22-27.

5. Cabilan CJ, Boyde M, Currey E. The effectiveness of pharmacist- led discharge medication counselling in the emergency department (ExPLAIN): A pilot quasi-experimental study. Patient Educ Couns 2019;102:1157-1163.

6. Miller IW, Camargo CA, Jr., Arias SA, et al. Suicide Prevention in an Emergency Department Population: The ED-SAFE Study. JAMA Psychiatry 2017;74:563-570.

7. Barker A, Cameron P, Flicker L, et al. Evaluation of RESPOND, a patient-centred program to prevent falls in older people presenting to the emergency department with a fall: A randomised controlled trial. PLoS Med 2019;16:e1002807.

8. Akin J, Johnson JA, Seale JP, Kuperminc GP. Using process indicators to optimize service completion of an ED drug and alcohol brief intervention program. Am J Emerg Med 2015;33:37-42.

9. O'Regan A, Cullen W, Hickey L, Meagher D, Hannigan A. Is problem alcohol use being detected and treated in Irish general practice? BMC Fam Pract 2018;19:30.

10. Glass JE, Andréasson S, Bradley KA, et al. Rethinking alcohol interventions in health care: a thematic meeting of the International Network on Brief Interventions for Alcohol & Other Drugs (INEBRIA). Addict Sci Clin Pract 2017;12:14.

11. Gaakeer MI, van den Brand CL, Gips E, et al. National developments in Emergency Departments in the Netherlands: numbers and origins of patients in the period from 2012 to 2015. Ned Tijdschr Geneeskd 2016;160:D970.

12. Nederlandse Zorgautoriteit. Update cijfers acute zorg 2019. NZa, 2020 (online). Available at: http://puc.overheid.nl/doc/PUC_301126_22. Accessed June 27, 2022.

13. Nederlandse Zorgautoriteit. Monitor acute zorg 2020. NZa (online). Available at: https://open.overheid.nl/repository/ronl-86881896-2d28-486d-b0c3-db1a302b3087/1/pdf/monitor-acute-zorg-2020.pdf. Accessed June 27, 2022.

14. van der Linden C, Reijnen R, Derlet RW, et al. Emergency department crowding in The Netherlands: managers' experiences. Int J Emerg Med 2013;6:41.

15. van der Linden MCC, van Ufford H, van der Linden NN. The impact of a multimodal intervention on emergency department crowding and patient flow. Int J Emerg Med 2019;12:21.

16. McKenna P, Heslin SM, Viccellio P, Mallon WK, Hernandez C, Morley EJ. Emergency department and hospital crowding: causes, consequences, and cures. Clin Exp Emerg Med 2019;6:189-195.

17. Carter EJ, Pouch SM, Larson EL. The relationship between emergency department crowding and patient outcomes: a systematic review. J Nurs Scholarsh 2014;46:106-115.

18. Morley C, Unwin M, Peterson GM, Stankovich J, Kinsman L. Emergency department crowding: A systematic review of causes, consequences and solutions. PLoS One 2018;13:e0203316.

19. McIntosh HD. The evolution of today's hospital emergency departments--current problems and challenges. Clin Cardiol 1996;19:846-856.

20. Gaakeer MI, van den Brand CL, Patka P. Emergency medicine in the Netherlands: a short history provides a solid basis for future challenges. Eur J Emerg Med 2012;19:131-135.

21. Holmes JL. Emergency medicine in the Netherlands. Emerg Med Australas 2010;22:75-81.

22. Thijssen WA, Giesen PH, Wensing M. Emergency departments in The Netherlands. Emerg Med J 2012;29:6-9.

23. Gaakeer MI, Veugelers R, van Lieshout JM, Patka P, Huijsman R. The emergency department landscape in The Netherlands: an exploration of characteristics and hypothesized relationships. Int J Emerg Med 2018;11:35.

24. Government of the Netherlands. Domestic violence and child abuse protocol. Ministry of Health, Welfare and Sport and Ministry of Justice and Security (online). Available at: https://www.government.nl/topics/domestic-violence/domestic-violence-and-child-abuse-protocol. Accessed June 27, 2022.

25. Meldcode. Basisset Medisch Specialistische Zorg Kwaliteitsindicatoren 2021:93-94. Inspectie Gezondheidszorg en Jeugd en Ministerie van Volksgezondheid, Welzijn en Sport (online). Available at: https://www.igj.nl/publicaties/indicatorensets/2020/09/22/basisset-medisch-specialistische-zorg-2021. Accessed June 27, 2022.

26. Delirium. Basisset Medisch Specialistische Zorg Kwaliteitsindicatoren 2021:29-30. Inspectie Gezondheidszorg en Jeugd en Ministerie van Volksgezondheid, Welzijn en Sport (online). Available at: https://www.igj.nl/publicaties/indicatorensets/2020/09/22/basisset-medisch-specialistische-zorg-2021. Accessed June 27, 2022.

27. de Kok BM, Eijlers B, van der Linden MC, Quarles van Ufford HME. Lean-driven interventions, including a dedicated radiologist, improve diagnostic imaging turnaround time and radiology report time at the emergency department. Emerg Radiol 2021;28:23-29.

28. van Veelen MJ, van den Brand CL, Reijnen R, van der Linden MC. Effects of a general practitioner cooperative co-located with an emergency department on patient throughput. World J Emerg Med 2016;7:270-273.

29. Gaakeer MI, van den Brand CL, Veugelers R, Patka P. Inventory of attendance at Dutch emergency departments and self-referrals. Ned Tijdschr Geneeskd 2014;158:A7128.

30. Nederandse Zorgautoriteit. Marktscan acute zorg 2017. Utrecht, NZa, 2017 (online). Available at: https://puc.overheid.nl/nza/doc/PUC_3650_22/1/. Accessed June 27, 2022.

31. Samaras N, Chevalley T, Samaras D, Gold G. Older patients in the emergency department: a review. Ann Emerg Med 2010;56:261-269.

32. Buurman-van Es BM. Kortdurende zorg bij ouderen als antwoord op spoedzorg. Huisarts en Wetenschap 2019;62. Available at: https://www.henw.org/artikelen/kortdurende-zorg-bij-ouderen-als-antwoord-op-spoedzorg. Accessed June 27, 2022.

33. Kingston A, Robinson L, Booth H, Knapp M, Jagger C. Projections of multi-morbidity in the older population in England to 2035: estimates from the Population Ageing and Care Simulation (PACSim) model. Age Ageing 2018;47:374-380.

34. Centraal Bureau voor de Statistiek. Meer ouderen in ziekenhuis met hoofdletsel. CBS, 2018 (online). Available at: https://www.cbs.nl/nl-nl/nieuws/2018/51/meer-ouderen-in-ziekenhuis-met-hoofdletsel. Accessed June 27, 2022.

35. Centraal Bureau voor de Statistiek. Dagelijks 13 doden door een val. CBS, 2019 (online). Available at: https://www.cbs.nl/nl-nl/nieuws/2019/49/dagelijks-13-doden-door-een-val. Accessed June 27, 2022.

36. VeiligheidNL. Feiten en cijfers valongevallen 65-plussers 2019. VeiligheidNL, 2019. Available at: https://www.veiligheid.nl/sites/default/files/2022-04/infographic%20cijfers%20en%20feiten%20valongevallen%202019%20%285%29.pdf. Accessed June 27, 2022.

37. Zorg voor beter. Valpreventie. 2021 (online). Available at: https://www.zorgvoorbeter.nl/valpreventie-ouderen/cijfers. Accessed June 27, 2022.

38. Government of the Netherlands. Living independently for longer. Ministry of Health, Welfare and Sport (online). Available at: https://www.government.nl/topics/care-and-support-at-home/living-independently-for-longer. Accessed June 27, 2022.

39. Van Der Linden MC, Balk FJE, Van Der Hoeven BJH, Van Loon M, De Voeght FJ, Van Der Linden N. Emergency department care for patients with mental health problems, a longitudinal registry study and a before and after intervention study. Int Emerg Nurs 2019;44:14-19.

40. Verheij C, Rood PPM, Deelstra CK, et al. Emergency Department visits due to intoxications in a Dutch university hospital: Occurrence, characteristics and health care costs. PLoS One 2019;14:e0226029.

41. Trimbos Instituut. Nationale Drug Monitor, jaarbericht 2020. Utrecht, Trimbos Instituut and Wetenschappelijk Onderzoek-en Documentatiecentrum, 2021.

42. Mérelle SYM, Boerema I, van der Linden MC, Gilissen R. Issues in emergency care for people who attempted suicide. Ned Tijdschr Geneeskd 2018;162.

43. Atzema CL, Schull MJ, Kurdyak P, et al. Wait times in the emergency department for patients with mental illness. Cmaj 2012;184:E969-976.

44. Diderich HM, Fekkes M, Verkerk PH, et al. A new protocol for screening adults presenting with their own medical problems at the Emergency Department to identify children at high risk for maltreatment. Child Abuse Negl 2013;37:1122-1131.

45. Diderich HM. The Hague Protocol: Detection of child maltreatment based on parental characteristics at the hospital Emergency Department. The Hague, Leiden University, 2015.

46. Burger I, van de Vlist D, Bravaric R, Janki I, Ferber M. SuNa-casemanagement Den Haag voor 12-27-jarigen met suïcidaal gedrag. Epidemiologisch bulletin. 2013;48(1-2):35-42.