Chapter: Advancing Healthcare Safety in the Netherlands through Incremental Learning Approaches

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In recent years, the Netherlands has taken significant steps towards further enhancing patient safety across the national healthcare system. In this chapter, we focus on how the Safety-II, or incremental safety practice approach was brought to the Dutch healthcare setting. We illustrate this by describing three case studies from macro to micro level in healthcare, including the national (A), organizational (B), and department/team level (C).

A. NATIONAL LEVEL

Dutch Nationwide Patient Safety program 'Tijd voor Verbinding' (Time to Connect)

One of the most noteworthy initiatives on a national level was the Dutch nationwide patient safety program 'Tijd voor Verbinding' ('Time to Connect'). This four-year program ran from 2021 – 2024 and aimed to reduce avoidable harm and mortality in specialist clinical care by adopting the incremental safety approach. Previous programs showed a stagnation in the reduction of preventable errors in hospitals, for example the national program 'Prevent harm, work safely' (in Dutch: VMS Veiligheidsprogramma 'Voorkom schade, werk veilig': 2008 - 2012) (De Blok et al., 2013) and subsequent research on the incidence and nature of (potentially) preventable harm and mortality in hospitals (Langelaan et al., 2017). Therefore, unlike previous national programs that often emphasized a reactive stance to errors and demanded compliance to national standards, the new national 'Time to Connect' program started a bottom-up movement in order to further improve patient safety. Based on the Safety-II paradigm (Hollnagel, 2014), the aim of the program was to reflect upon and learn from (the variety in) daily practices, including incidents as well as normal everyday and exceptional performance. This was done by a coalition of representative organizations of hospitals and private clinics, healthcare professionals, and patients.

Approach of the program

Given the results of the previous national program and the accompanying research on the incidence and nature of adverse events as aforementioned, three themes were selected to focus on in 'Time to Connect':

- Anticoagulation care
- The frail elderly
- Multidisciplinary dialogue

At first, multidisciplinary expert teams were formed around these themes, consisting of a representative diversity of healthcare professionals and patients. As schematically shown in Figure 1, in coalition with these teams positive and inspiring examples related to anticoagulation care, the frail elderly, and multidisciplinary dialogue, were inventoried in all hospitals and private clinics. In addition, each participating organization addressed their needs and struggles around the themes. In the second phase, the program advised, facilitated, and supported organizations to transfer key components of positive deviant examples into their local context. By the end of the program, networks were formed on each theme relevant to reflect on and learn from each other's daily practice.



Figure 1. *Schematic approach of Dutch nationwide 'Time to Connect' program*

Research program

Additionally, a national research program funded by the Dutch national ministry of health, was launched to scientifically evaluate how incremental safety practices might contribute to safer healthcare (ZonMW, 2019). A national organization called 'ZonMW' designed this national research program and managed the funding and logistical aspects. First, an expert committee was formed to develop the eligibility criteria for the research and determine the focus and priorities of the program. The overall goal of this research program was to study the principles of the incremental safety practice, or Safety-II, framework and the contribution to patient safety in the context of Dutch hospital care. Research projects were expected to deploy the method of 'action research', which brings about change of practice while creating knowledge at the same time. In light of this, proposals were assessed for their cyclical and participatory nature. In two rounds (2021/2023), 23 research projects were selected from 75 submissions, to receive funding (a total of 3.4 million euros). During each funding round, researchers presented their ongoing projects during progression meetings, which served to receive input for their projects and stimulate interaction among the researchers of different projects. At the end of each round, a closing meeting was organized to share lessons learned and inspire future projects. A few projects from round one, also received funding for a follow-up research project in round two. The main theme that stood out in the end reports and publications flowing from these 23 projects, was routine reflection on everyday care by the caregivers, with a focus on a strong role for the nursing staff. While many projects underlined the value of routine moments of multidisciplinary reflection on everyday care processes, the researchers also pointed out that this could be particularly challenging to organize (i.e. getting all these caregivers in one room during work hours). What seemed to work best was to incorporate these moments of reflection in existing structures, such as the patient rounds or existing team meetings. Table 1 lists some reflections on the main themes that could be identified in the reports of the 23 research projects. One project will be discussed in more detail in subsection C below.

Table 1. Main themes and reflections identified in the 23 incremental safety research projects in the government-supported national research program

Theme	Key reflections

Collaborative reflection and discussion	• To address the following issues:
	  ○ widespread lack of clarity regarding roles, tasks and responsibilities
	  ○ different perspectives on what is 'good care', often left undiscussed
	  ○ limited insight into each other's work and consequences of one another's actions
	• Enhances clarity, mutual coordination, anticipation, systemic improvement
	• Particularly valuable to discuss practice variation and trade-offs (e.g., how to balance efficiency-thoroughness trade-offs)

Work-as-imagined versus work-as-done	• How it was designed not always feasible in practice • Subtle, 'unprescribed' actions from caregivers were found to increase success • Many solutions already exist within teams or systems, key to make these visible • Not always possible to standardize in protocols or work instructions • Some instructions interpreted in various ways • Various chances to relieve the burden on professionals (e.g., decrease volume of information they need to remember) • Standardize where possible, leave room for variation where helpful
Positive and participatory nature	• Greater appreciation for professionals as human capital and their craftsmanship • Practice variation approached from a more nuanced perspective • Brings about more motivation to put things in practice • Process optimization decreases work load and improves job satisfaction • Team spirit and interdisciplinary collaboration improves
Participation of patients and relatives	• Meets a need and contributes to overall success

Safety-II learning course

In an attempt to 'keep the movement going' also after the end of the national program in September 2024, a two-day Safety-II learning course was developed to train and guide multidisciplinary teams from various hospitals and private clinics to put the incremental safety approach into practice in their own centers. Course faculty consisted of six experts with a background in incremental safety practices in research and in practice; four of which were also (former) medical professionals. The one-and-a-half-day program covered theoretical lectures alternated with group discussions (e.g., using propositions or a clinical case) and group sessions during which teams worked on plans to put the theory into practice locally. Plans varied from ideas for reflective team meetings to changing the hospital's approach to incident investigations. The course included an overnight stay to offer time to process the information and discussions during the day as well as enhance discussion and networking between participants. Participating teams consisted of doctors, nurses and quality/safety professionals from various hospitals. Representatives from their management and board of directors also joined a special part of the program in order to discuss and get support for their particular ideas, but also to reflect more generally on their managing role in relation to an incremental safety approach.

Lessons learned from the national program: essential components for incremental safety practices

In an action-research based evaluation of the program, lessons learned as well as 'main ingredients' for enhancing an incremental safety approach on a national level, were identified. These five components highlight the program's successful strategies for promoting knowledge sharing, capacity building, and a culture of safety (Figure 2):

1. **Finding Positive, Inspiring Examples**: the program strongly aimed at identifying "positive deviant" examples—organizations that excelled in patient safety in relation to the three key patient safety themes. By transferring and adapting key aspects of these inspiring practices to other contexts, the program has motivated improvement initiatives across diverse healthcare settings, demonstrating the value of peer-to-peer learning.
2. **Synthesis and Knowledge Dissemination**: in line with the first element, during the program a wide array of workshops and knowledge clips was developed to distill and spread the inspiring practices. This component has made knowledge more and easily accessible and contributed to translating complex theory into practical tools, facilitating healthcare professionals to incorporate effective patient safety strategies of other organizations into their daily work.
3. **Safety-II Learning course**: as described earlier, in the end phase of the program multidisciplinary healthcare teams—including management and board members—were trained in the Safety-II paradigm. This proactive approach has enhanced resilience and adaptability, equipping teams to maintain safety even in complex or high-pressure situations. The evaluation of the national program revealed group-based learning initiatives like this as one of the core elements in enhancing incremental safety practices.
4. **National Learning and Improvement Networks**: the establishment of national networks focused on the three key patient safety themes has fostered continuous improvement. These networks facilitate peer learning and collaborative problem-solving, creating a supportive infrastructure for sustained safety advancements.
5. **Network of Patient Safety Ambassadors**: additionally, the program has built a network of patient safety ambassadors who act as 'champions of safety' within their organizations. These ambassadors have been and will be crucial in embedding a culture of safety, promoting ongoing adoption of inspiring practices, and fostering accountability for further improvement of patient safety.

Together, these components illustrate the program's comprehensive approach and its effectiveness in building a safer, more resilient healthcare environment on a national level.

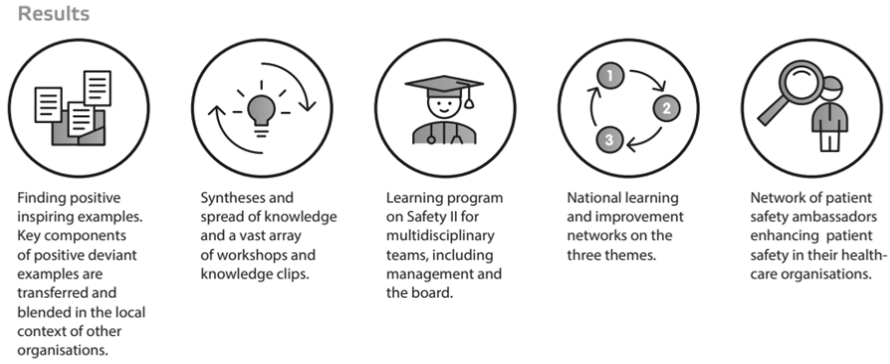


Figure 2. *Essential components for incremental safety practice on a national level*

B. ORGANIZATIONAL LEVEL

Incremental Safety Initiatives in the Amphia Hospital, Breda, the Netherlands

At the Amphia hospital in Breda, the Netherlands, the incremental safety approach is applied to shift the focus from the prevention of errors to learning from daily practice. This implementation follows an organic process, with the hospital opting for a flexible, incremental approach instead of a formal project model. Based on the Safety-II paradigm (Hollnagel, 2014), new initiatives and improvement actions develop gradually, aligning with the daily realities and needs of healthcare professionals. In this chapter, we discuss key initiatives within this approach: "Lunch & Learn" sessions, FRAM analyses, accountability-focused projects, and video reflection.

The Driving Forces Behind Safety-II

The foundation for implementing Safety-II at Amphia lies in acknowledging that existing safety strategies often focus on reducing errors and incidents without sufficient attention to the resilience of healthcare professionals who keep healthcare processes running daily. Amphia aims not only to learn from mistakes but, more importantly, from variations in everyday practice, using these as a basis for structural improvement in care. Amphia also seeks to foster a culture where healthcare professionals feel involved and responsible, with shared ownership of quality and safety.

Incremental Approach

Initiatives at Amphia follow an incremental approach, without rigid project structures or predefined guidelines. Instead, a "learning culture" is encouraged, where healthcare professionals are given space to reflect on their experiences and drive improvements themselves. Key initiatives include:

1. **Lunch & Learn Sessions**
   These sessions provide an informal platform for all Amphia staff to come together and learn about good practices and developments within the organization. These highly attended sessions emphasize open communication and sharing insights, aiming to foster learning from each other, create connections within the organization, and inspire team growth (Van Es, 2024).

2. **FRAM Analyses**
   Another significant component of the Safety-II approach at Amphia is FRAM (Functional Resonance Analysis Method) analyses. This methodology is used to understand the functioning of healthcare processes and their variability. Through FRAM analyses, Amphia has identified potential improvements, which have proven valuable in incident investigations and themes raised by healthcare professionals, as well as in complex, hospital-wide issues beyond the scope of standard Safety-I approaches. The findings from FRAM are shared with relevant teams, contributing to a culture of reflection and process optimization (Programma Tijd voor Verbinding, 2021). Due to positive experiences and increasing demand, a "train-the-trainer" principle has been adopted. Initially, Quality & Safety advisors were trained, followed by healthcare professionals and decentralized quality advisors.

3. **Projects on Accountability**
   Amphia focuses on new methods of accountability by critically reflecting on existing practices. One focus area for example is revising the double-check procedure for administering all parenteral medications. Instead of enforcing this procedure strictly, a balance is sought between formal control mechanisms and professional autonomy. Nurses and hospital pharmacists have provided input based on their professional judgment, leading to adjustments in local protocols and an approach centered on trust in healthcare professionals' expertise. Nationally, this project sparked broader discussions among hospital pharmacists, using Amphia's experiences as input.

4. **Video Reflection**
   Amphia has introduced video reflection as a way for healthcare professionals to reflect on their way of working and engage in team-based peer review. By recording daily work situations and discussing them, healthcare professionals can learn from concrete examples in their practice. This method can be helpful in identifying strengths and areas for improvement, contributing to individual growth and enhancing trust and collaboration within teams.

Results and Outcomes
The initiatives at Amphia provide healthcare professionals with tangible tools to influence their work. Healthcare professionals report feeling more engaged and having greater ownership of their roles in the care process through Safety-II tools. Over the past few years, Safety-II has proven effective in addressing complex, hospital-wide challenges where previous learning potential seemed limited.
Safety-II offers a framework that contextualizes cases within daily practice, creating a safe learning environment that centers on processes rather than the healthcare professional. Moreover, Safety-II is not only applicable to large, complex issues but also offers solutions to questions and curiosity from healthcare professionals themselves. This approach has led healthcare professionals to increasingly seek out Safety-II tools.

Future Perspective and Further Development
Based on lessons learned and positive outcomes, Amphia is committed to further developing the Safety-II approach. Key next steps include:

1. Training the decentralized committees that analyze incident reports in the Safety-II approach, which is also being extended to central incident investigators. They will receive tools to analyze cases appropriately with both Safety-I and Safety-II methodologies.
2. Expanding the use of video reflection, for instance, in training situations and scenario training, with a focus on accessible applications for safe learning from daily practice.
3. Exploring how the Learning Teams method can be implemented, initially in incident investigations.

Amphia's experience shows that an organic, incremental approach to safety management is possible within a complex healthcare environment. By focusing on daily practice and providing healthcare professionals with tools to exert influence, a culture of continuous improvement and ownership is fostered. This approach enhances staff engagement. Safety-II demonstrates that safety arises not only from rules and protocols but also from leveraging the knowledge and experience of healthcare professionals themselves (Zweers, 2020).

C. DEPARTMENTAL/TEAM LEVEL

Neoflix: weekly team meetings to reflect on clinical practices using video recordings of real cases

At the department level, the staff of the neonatal intensive care unit (NICU) at the Leiden University Medical Center (LUMC) have implemented a dedicated team meeting for weekly routine reflection on clinical practice, using an approach also known as ‘video reflexivity’. Their project to implement and refine this approach is called ‘Neoflix’ and has also been the subject of a PhD thesis (Heesters, 2024a).

The use of videorecording to reflect on clinical practice has emerged as a potential tool for improving healthcare. By capturing real-time medical procedures, video recordings offer a unique perspective into the complexities of patient care, especially in dynamic environments like the NICU. The Neoflix project was designed with the Safety-II perspective in mind, recognizing that healthcare is inherently complex and that improvement extends beyond simply reducing guideline deviations. Initially, video recordings were used at the NICU of the LUMC to study specific aspects of neonatal resuscitation, since 2009, this was carried out in weekly plenary team sessions since 2014 (Schilleman et al., 2012). However, it quickly became evident that these recordings could also serve as a valuable tool for wider reflection and improvement. The Neoflix project, launched in 2021, aimed to realize the full potential

of this practice, integrating the Safety-II approach and adding focus on non-technical skills, rather than adherence to technical instructions. Moreover, in the adapted format of the weekly sessions, nurses were now also present to participate in 'video reflection'.

Video review was found to enhance team resilience and improve patient outcomes through learning from both successes and failures. By systematically capturing and reviewing clinical practice, neonatal care providers are able to identify areas for improvement, shared best practices, and enhanced teamwork (Heesters et al., 2024d). Therefore, this approach facilitates the integration of local and external guidelines, individual clinical expertise and strategies to strengthen team resilience and teamwork. Providers gain insight into the influencing role of a diverse scope of technical and non-technical aspects, as well as time and context. The videos, as a shared visual record of clinical events, help providers to gain a deeper understanding of colleagues' perspectives and facilitate the identification of system-level issues. Additionally, video review can help to reduce recall bias and promote a more accurate understanding of clinical events. A local action research study found that over a nine-month period, 120 lessons were learned, of which many (70%) were lessons that emerged from collectively reflecting on practice variation (Heesters et al., 2024d).

The Neoflix method involves several steps: recording key procedures, conducting structured video-based debriefing sessions, reflecting on performance, and implementing changes based on insights gained from these review sessions (Heesters et al., 2024b). To ensure the success of video review, several practical considerations must be addressed, including obtaining informed consent, protecting patient privacy, and allocating sufficient time for preparation of the debriefing sessions. One of the key aspects of the Neoflix approach is the creation of a safe and supportive learning environment where healthcare professionals can openly discuss their practice without fear of judgement (Heesters et al., 2024c). For example, the project team always asked for provider consent with the option to decline at all times, and always discussed the video recordings with involved providers before the actual team meeting. The chair of the meeting also played an important role in safeguarding an open and respectful learning environment. The Neoflix team has developed a comprehensive toolbox to guide other institutions in implementing their own video review program. This toolbox includes practical tips on equipment, workflow, and organizing video review sessions, and can be found on the website: https://www.neoflix.care.

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