Doctoral Thesis

Patient safety and suicide
– learning in theory and practice from investigations of suicide as patient harm

Elin Fröding
Patient safety and suicide
– learning in theory and practice from investigations of suicide as patient harm

Elin Fröding
Acknowledgements

“Alla som vill lära sig något måste ha en läromästare

Man lär sej, om man kan, och sen försöker man omforma till något eget”

Ulf Lundell (Lundell, 2020)

[Anyone who wants to learn something must have a master

You learn, if you can, and then you try to transform it into something of your
own]

My journey as a PhD student and the work with this thesis were feasible thanks to support and encourage from a large number of persons. My deepest gratitude to all of you for joining and supporting me on this expedition. Some persons deserve a special mention here.

Boel Andersson Gäre, my main supervisor; for sharing your brilliance and all your expertise, your never-ending enthusiasm and ideas – the always, all days, inspiring ‘Popcorn Machine’! Most of all though, your wisdom and solid down-to-earth-pragmatism made the greatest impression that will last for the rest of my life.

Åsa Westrin, my co-supervisor; what a luck that we met on the psychiatry congress in Stockholm on my 40th birthday! I am forever grateful for your guidance through the mysteries of research and science, from the first steps as a research novice, gradually finding the road forward, and shaping the researcher.

Axel Ros, my co-supervisor, master, and boss; of all people you are the one who made the greatest impact on the direction for my research and making it all happen. I wonder how many hundreds of emails we have sent to each other over these years. Always fast responding, concise and spot on with your wise comments. I really appreciate your integrity, extraordinary expertise and devotion. Your outstanding support throughout this process has been invaluable.
Charles Vincent, my co-author in paper III and IV; for the greatest inspiration and your excellence in patient safety research. I still remember the tremendous impact your ideas made on me the very first time I read you, and the joy to find such an inspirer! Your wisdom have brought me important insights and I am very fortunate to get the possibility to work together with you.

Bo-Kenneth ‘Knutte’ Knutsson, my former boss; for your belief and trust in me, your leadership support and prioritising my research, making this possible.

I am very grateful to all the persons with own experiences of suicidality, the suicide researchers, the patient safety leaders, and the officials at supervisory authorities that were willing to share their experiences and contributed in study IV.

All my colleagues at the Department of Psychiatry in Eksjö; for years of encouragement and support, despite me being absent from the clinical work. A special gratitude to Björn Golsäter, Carina Bergström, Karin Lundberg Olsson, Olivia Ciortescu, and Robin Kihlbaum; for friendship and support, and keeping the flag of psychiatry flying high. Berit Gustafsson; for support and practical advices.

All my colleagues at the Department of Patient Safety; for support and patience over the years of me being occupied with this research. Joanna Mellqvist; for your gift to ask the wisest questions.

Annica Lindström, Karin Skog and Maria Berlin; for your support and our work together with the investigations of suicide, bringing important learning and inspiration over the years.

My colleagues in the national network for chief medical officers in psychiatry; for vivid discussions, ideas and encouragement over the years. A special gratitude to Charlotta Brunner, Martin Hultén, and Elizabet Rajs Haking; for your generosity, sharing of your experiences, and contributions to merge theories into practice.

Doctoral students, colleagues and staff at Jönköpings University, Jan Mårtensson and Sofi Fristedt; for engagement and inspiration. Ann-Christine Andersson; I am grateful for your support and contributions throughout my
doctoral studies and the work with my thesis. Sofia Persson; for valuable comments at my mid and final seminar, discussions, and comments on paper IV. Andreas Gremyr; for your contribution at my mid seminar. Malin Holmqvist and Charlotte Engvall; for discussions and practical support.

Bo Rolander; for your help with the statistics in paper I and II, always friendly and patient.

Elisabet Nylander; for your support in the development of the search methodology in paper III.

Medical Library in Region Jönköpings county; for all support in searches, bringing me papers, and help with references.

The Officials at the supervisory authorities; for bringing me the material to study I and II.

Doctoral students and colleagues at Lunds University; for inspiration and cooperation in the project of investigation of healthcare utilization of individuals who died by suicide in Sweden in 2015. Sara Probert-Lindström and Erik Bergqvist; it has been a pleasure to collaborate with you.

Pelle Gustafsson; for inspiration, support, and encouragement over the years of my research, and for valuable comments at the mid seminar. Sally Hultsjö; for your contribution at my mid seminar.

Karin Pukk Härenstam; for valuable comments and encouragement at the final seminar, and sharing your expertise during the reading course in patient safety. Per Bülow; for your contribution at the final seminar.

Ullakarin Nyberg; for your enthusiasm and tremendous ability to inspire and personify ‘life strength’. “We must never give up before the patient.”

Rickard Bracken, Suicide Zero; for helping me to get in contact with informants for study IV.

I am grateful to Region Jönköpings County and Futurum, the Academy for Health and Care; for funding and support. A special gratitude to Margareta
Stenmarker, Staffan Hägg, and Peter Blomstrand; for valuable support during my first years as a PhD student.

Friends, near and far; for all contributions to the regular life beyond the screen of my computer. Anna, my very best neighbour; for all your funny messages, photos, encouragement, and cold baths in Vättern.

My parents, Barbro and Sven; for providing me with self-reliance and determination in all my different devotions in life. For always being there with unfailing support in all weathers and challenges.

My sister, Ida; the Best Sister in the world. For sending funny messages, sharp-eyed observations, and an amazing memory. Moreover, for sharing the same household God. “Just det du tror på ska du göra. Inget annat.”¹

My Love, Mikael; my greatest admiration for your interest, ability, and will to learn and contribute in my research in all the ways you can. Your endless desire to support me 24/7/365, ‘the Tireless’. My inspiration to become the best possible version of myself. “En man och en kvinna möts av en slump, sen har dom ett liv att dela.”²

Alfred, Otto, and Märta; my most loved and fantastic children. You have taught me so much about the core of life itself. You are always the very meaning in my life. Endless love. ”Det är gott att leva!”³

---

¹: Ulf Lundell: Två blåa ögon (Livslinjen, 1991)
²: Ulf Lundell: Vänner igen (Utanför murarna, 1989)
³: Ulf Lundell: Gott att leva (På andra sidan drömmarna, 1996)
Abstract

Suicide is a global public health challenge, around 700,000 people die from suicide every year. A large proportion was in contact with healthcare close in time before death, suggesting healthcare to be an important resource in the work with prevention of suicide.

The overall aim of this thesis was to increase the knowledge and understanding of suicide as an incident of patient harm, and to find possibilities of changes in the approach to suicide investigations which could contribute to increased learning and improve suicide prevention in healthcare.

Four studies were performed: in the first two studies we reviewed investigations of healthcare performed of suicide cases reported to the supervisory authority as patient harm. Study III was a scoping narrative literature review of the problems with the current approaches to investigations of suicide as patient harm and possible changes for improvement. Study IV was an interview study in which I explored the requirements for valuable investigations of suicide from the views of persons with lived experience of suicidality and professionals. All studies were performed in a Swedish context.

The majority of suicides reported as incidents of patient harm were reported by a psychiatry healthcare provider. Most suicides occurred shortly after the last contact with healthcare and during outpatient care. Demographically, these cases were representative compared to the suicide cases in the entire population.

As incidents of patient harm, suicides differ from most other kinds of reported patient harm in some ways. Only a small proportion occurs in hospitals, most occur in the home of the patient without any witnesses or staff around. Suicide is an act performed by the patient himself/herself and is usually the final outcome of the complex interplay of several different variables with different impacts in different contexts, varying over time and between individuals.

It was found that the adaptation of the investigations to the requirements of the supervisory authority contributed to the fact that the learning from the
healthcare’s investigations of suicide has levelled off, the same shortcomings and actions were reported over time. The investigations were performed with a strict healthcare provider perspective, with focus on the last contact with the patient, routines, and what went wrong. This resulted in suggested measures for improvement at an organizational micro level without organizational sustainability over time and with a risk to not address organizational system deficiencies.

The investigations of suicide as potential patient harm should integrate current knowledge in suicidology and patient safety to enable learning and insights valuable for healthcare improvement. This include a holistic perspective of the patient’s situation, analysis of a longer time period and factors of importance for suicidality, suicide prevention, and patient safety, professionalization of the investigations, analyses across organizational boundaries, and focus on learning. A framework to guide this analysis is suggested in this thesis.

The development of knowledge in the science fields of patient safety and suicidology imply the need for a cultural shift in the understanding of suicide as an incident of patient harm. Instead of making a difficult and often to some extent speculative assessment if a suicide had been prevented if other actions had been performed in the contacts with healthcare, and therefore should be investigated and reported as a severe patient harm, or not, the focus in the analyses should be on risk management over time. I propose a framework with factors of importance for a safe healthcare at suicidality to guide this analysis.
Svensk sammanfattning

Bakgrund

Suicid är ett globalt folkhälsoproblem som orsakar ungefär 700 000 dödsfall årligen, vilket gör suicid till den tionde vanligaste dödsorsaken i världen. Suicidalitet är komplext och multifaktoriellt, och påverkas av flera olika sociala, biologiska och psykologiska faktorer som samverkar och gör att suicidaliteten varierar över tid. I Sverige avlider cirka 1200 människor varje år i suicid, ungefär två tredjedelar är män. Före millennieskiftet minskade antalet suicid i Sverige, men under de senaste två decennierna har nedgången stannat av.

Patientsäkerhet är ett relativt nytt forsknings- och kunskapsområde, där utveckling av kunskap efter millennieskiftet nu är i en expansiv fas. Rapportering och utredning av skador i vården för att ta lärdom vad som gått fel är en spridd och framträdande del i vårdens patientsäkerhetsarbete.

Enligt svensk patientsäkerhetslag ska alla händelser som inträffar i sjukvården där patienten drabbas av en skada som är allvarlig och hade kunnat undvikas om adekvata åtgärder vidtagits i vården, allvarliga vårdskador, utredas och anmälas av sjukvården till tillsynsmyndigheten Inspektionen för vård och omsorg (IVO). Föreskriften kallas lex Maria och reglerar att utredningen ska innehålla en kartläggning av händelseförloppet och vilka faktorer som påverkat det, föreslå åtgärder för att förhindra att samma händelse inträffar igen och lärande av händelsen.

Mellan 2006-02-01 - 2017-08-31 var det obligatoriskt för vårdgivare i Sverige att utreda och anmäla alla suicid där den avlidna haft kontakt med vården inom fyra veckor före dödsfallet, oavsett om händelsen ansågs varit möjlig att undvika eller inte.

Kunskapen om suicid som vårdskada, hur suicid kan förebyggas genom insatser i sjukvården, inkluderar kunskapsområdena suicidologi och patientsäkerhet och är ännu bristfällig. Genom att kombinera och använda kunskaper inom båda kunskapsfälten kan ny kunskap skapas och användas för att bidra till att göra vården av suicidnära patienter bättre och säkrare.
Syfte

Syftet med denna avhandling var att öka kunskapen om och förståelsen för suicid som vårdskada och hur utredningar av suicid kan utvecklas för att bidra till ökat lärande och förbättrad vård av suicidnära patienter.

Delstudier

Studie I: Retrospektiv genomgång av vårdens anmälningar och utredningar av suicid 2015 anmälda till tillsynsmyndigheten.


Studie III: Kartläggande litteraturöversikt av brister och möjliga förbättringar i nuvarande metodik för utredningar av suicid som vårdskada.

Studie IV: Intervjustudie med personer med egen erfarenhet av suicidalitet och experter för att undersöka vad de anser krävs för att vårdens utredningar av suicid ska bidra till lärande och förbättringar i vården av suicidala patienter.

Resultat


Studie III: Flera svagheter i utredningsmetodiken för vårdskador identifierades, som brister i att belysa relevanta faktorer för den suicidala processen och att integrera patientens och närståendes perspektiv. För ett ökat lärande bör utredningar utföras av externa analysledare tillsammans med ett
multidisciplinärt analysteam med kunskap i patientsäkerhet och suicidologi. Utredningarna behöver inkludera en längre tidsperiod, belysa hur vården har kunnat möta patientens behov och förväntningar, integrera faktorer som påverkar suicidalt beteende, prevention och säkerhet, samt lära av återhämtning från akut suicidalitet, tidigare suicidförsök, och perioder av stabilt mående.

Studie IV: Det behövs en helhetssyn i utredningarna av suicid inkluderande patientens livssituation och förväntningar på vården, suicidalt beteende över tid och analys av faktorer som är viktiga för en säker vård. Viktiga aktörer runt patienten behöver delta i utredningen för att förstå patientens situation. Analysledaren bör vara extern och analysteamet multidisciplinärt med kompetens i suicidologi och patientsäkerhet.

**Slutsatser**

Majoriteten av suicid som anmälde som vårdskada anmäldes av en psykiatrisk vårdgivare och inträffade i nära anslutning till vård. Demografiskt ses inga tydliga avvikelser jämfört med suicid i hela befolkningen.

Suicid skiljer i vissa avseenden från andra händelser som anmäls som allvarliga vårdskador. Endast en liten andel sker inne på sjukhus, de flesta sker i patientens bostad utan några vittnen eller personal närvarande. Suicidet är en handling av patienten själv och vanligen slutet av ett komplext samspel av flera olika variabler om samspel över tid.

Utredningarnas anpassning till kraven från tillsynsmyndigheten har bidragit till att lärandet från vårdens utredningar av suicid har avstannat, samma brister och åtgärder rapporterades återkommande över tid. Utredningarna utfördes med ett strikt vårdgivarperspektiv med fokus på vården sista kontakt med patienten, rutiner och det som gått fel. Detta resulterade i åtgärder på en organisatorisk mikronivå utan organisatorisk hållbarhet över tid och som riskerade att inte åtgärda brister i systemet på organisatorisk nivå.

För att utredningarna ska bidra med kunskap och lärande för att förbättra vården av suicidnära patienter behöver utredningsmetoden integrera aktuell kunskap inom suicidologi och patientsäkerhet och utföras av analysledare med utredningskompetens. Utredningarna behöver ha ett helhetsperspektiv på
patientens situation, inkludera hela förloppet av den suicidala processen, över organisationsgränser, och analysera faktorer av betydelse för suicidalitet, suicidprevention och en säker vård, med fokus på lärande. Vi har tagit fram ett förslag på vad en sådan utredning bör innehålla.

Kunskapsutvecklingen inom patientsäkerhet och suicidologi implicerar behovet av en kulturförändring i synen på suicid som vårdskada. Istället för den svåra och ofta spekulativa bedömningen om ett suicid kunde undvikits med andra åtgärder vid kontakterna med sjukvården, och därmed ska utredas och anmälas som allvarlig vårdskada, eller inte, bör fokus vara på vårdens förmåga till riskhantering över tid. Jag föreslår ett ramverk med faktorer som är viktiga för att vården av patienter med suicidalitet ska vara säker att använda i denna bedömning.

**Implikationer**

**Vårdens arbete med suicidnära patienter**

_Bedömning av suicidalitet för prevention och riskhantering över tid._ Ökad kunskap om och förståelse för faktorer som påverkar suicidalitet över tid implicerar ett skifte i användningen av suicidriskbedömning; från ett verktyg för prediktion till prevention. Bedömningen ska identifiera patienter med suicidalitet, intervenera och planera åtgärder som minskar suicidalitet.

_Patienten och närmstående ska aktivt involveras_ i bedömning, planering, genomförande och uppföljning av behandling och insatser för att minska suicidalitet.

_Uppmärksamhet vid vårdens övergångar och tät uppföljning vid suicidalitet._ Suicidnära patienter ska följas tätt av vården för att eventuella försämringar ska fångas upp snabbt och symtomreducerande behandlingar och insatser sättas in.

**Utredningar av vårdsnära suicid**

_Fokus på riskhantering och lärande istället för undvikbarhet._ Utredningarna ska analysera både det om gjordes bra och det som kunnat göras säkrare.
Utbilda externt analysledare och multidisciplinära analysteam. Kompetenser i utredningsmetodik, patientsäkerhet och suicidologi ska finnas i utredningsteam och en mall kan underlätta för att vägleda analysen.

Patientens perspektiv, suicidalitet och helhet. Faktorer av betydelse för patientens mående och suicidalitet och hur dessa hanterades av vården över tid behöver analyseras. Närstående, aktuella vårdgivare och andra personer som kände patienten behöver involveras i utredningen för att förstå helheten.

Nationellt kvalitetsregister för att öka kunskap om suicid och förbättrad suicidprevention

Ett nationellt kvalitetsregister för suicid kan ge ökad kunskap och möjligheter att finna brister och förbättringsåtgärder som kan införas på nationell nivå.

Förändrade krav på vården interna utredningar av vårdskador

Anpassning efter händelsens karaktär. Denna bedömning kräver kunskaper inom patientsäkerhet och inom det specifika område som händelsen berör, vilket ställer högre krav på utredare och tillsynsmyndighet. Riktlinjer för hur utredning av olika typer av händelser ska ske behövs.

Ett bredare organisatoriskt systemperspektiv. Lagen måste stödja informationsutbyte över organisationsgränser (olika vårdgivare, kommun och myndigheter) för att utredningarna ska kunna fånga helhetsperspektivet.

Lärdomar av det som fungerat bra i vården. Lärande ska ske även av det som fungerade bra i vården och perioder av tillfrisknande och återhämtning.

Spridning av lärande från vårdskadeutredningar behöver organiseras och vara tillgängligt på regional och nationell nivå.

Förändrade arbetssätt för tillsynen av vården

Ett skifte från fokus på vårdskador till kvalitet och vården positiva utfall, riskhantering, proaktivt patientsäkerhetsarbete och patientsäkerhetskultur behövs.
Original papers

The following papers are enclosed as appendices. Study I, II, and III are published with open access and when properly cited free to reprint for non-commercially use.

Paper I

Deficiencies in healthcare prior to suicide and actions to deal with them: a retrospective study of investigations after suicide in Swedish healthcare.
Roos af Hjelmsäter E, Ros A, Andersson Gäre B, & Westrin Å.
BMJ Open 2019;9:e032290. DOI: 10.1136/bmjopen-2019-032290

Paper II

Suicide as an incident of severe patient harm – a retrospective cohort study of investigations after suicide in Swedish healthcare in a 13-year perspective.
Fröding E, Andersson Gäre B, Westrin Å, & Ros A.
BMJ Open 2021;11:e044068. DOI: 10.1136/bmjopen-2020-044068

Paper III

Six major steps to make investigations of suicide valuable for learning and prevention.
Fröding E, Vincent C, Andersson Gäre B, Westrin Å, & Ros A.
Archives of Suicide Research 2022; DOI: 10.1080/13811118.2022.2133652

Paper IV

Requirements for effective investigation and learning after suicide: The views of persons with lived experience and professionals.
Fröding E, Vincent C, Andersson Gäre B, Westrin Å, & Ros A. In manuscript
Prologue

My interests in suicide prevention started as an intern at a psychiatric clinic when I experienced an unexpected suicide by a man suffering from depression, and the sequent chaos his suicide left behind. Depression is a disorder with great opportunities to cure, and his suicide seemed such a waste. The complexity and the diverse faces of psychiatric disorders and suicidality made me later on to decide to become a psychiatrist.

As a resident in psychiatry, I got frustrated at the shortcomings to meet the needs of the suicidal patients in healthcare. I engaged in performing investigations of healthcare after suicide and found that the outcomes of the investigations did not meet my expectations of learning from the incidents and improving care.

Later, in the perspectives of being a chief medical officer/patient safety leader with the responsibility to report incidents of severe patient harm to the supervisory authority, I became aware of several limitations in the incident reporting system and the lack of sharing experiences between professionals and units. I began to think that progress in the work of preventing suicide may be supported by learning from cases through merging the sciences of suicidology and patient safety.

With this thesis I wanted to explore investigations of suicide as patient harm, in a clinical and theoretical perspective. This was performed by four separate studies that illuminate the phenomenon through different perspectives.
# The thesis at a glance

<table>
<thead>
<tr>
<th>Study I</th>
<th>Study II</th>
<th>Study III</th>
<th>Study IV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aim</strong></td>
<td>To aggregate the conclusions of the investigations of healthcare after suicide in a Swedish context.</td>
<td>To explore how the mandatory reporting of suicides in Sweden influenced the outcomes of the investigations 2006-2019.</td>
<td>To explore the problems with the current approaches of investigations of suicides, and to propose and discuss ways to move forward.</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td>Deficiencies in healthcare before suicide were reported in 55% of cases, most frequent in suicide risk assessment and treatment. Deficiencies and actions were mainly at micro level.</td>
<td>The investigations focused on the final patient contact before suicide. Updating routines and educational actions were increasingly proposed. Sharing conclusions across departments was rarely recommended.</td>
<td>Investigation methods need to encompass the progress of the knowledge about suicide behaviour, suicide prevention, and patient safety. The analyses should embrace a wider time period and involve family and relevant stakeholders.</td>
</tr>
<tr>
<td><strong>Conclusions</strong></td>
<td>Deficiencies related mainly to care in the immediate interface between patient and staff and the last contact with healthcare. Actions centered on single educational interventions.</td>
<td>The outcomes were similar across the cohorts, and the investigations were adapted to suit the structure of the authority’s reports rather than the specific incident type. No new service improvement or lessons were identified.</td>
<td>There is a need for a paradigm shift in the approaches of investigations of care at suicide to enable learning and insights valuable for healthcare improvement.</td>
</tr>
</tbody>
</table>
Abbreviations

BCE - Before Common Era

ETTO - The Efficiency-Thoroughness Trade-Off principle

IMV - Integrated Motivational and Volitional model

ITA - Ideation-To-Action models of suicide behaviour

ITPS - Interpersonal Theory of Suicidal Behaviour

IVO - The Health and Social Care Inspectorate [*Inspektionen för Vård och Omsorg*]

RCA - Root Cause Analysis

STC - Systematic Text Condensation

WHO - World Health Organization

3ST- Three Step Theory
**Table of contents**

1. Introduction ................................................................................................................. 1  
   1.1. Nomenclature ......................................................................................................... 3  
      1.1.1. Suicidology ...................................................................................................... 3  
      1.1.2. Patient safety .................................................................................................... 4  
2. Theoretical background ................................................................................................. 6  
   2.1. Suicidology ............................................................................................................. 6  
      2.1.1. Epidemiology .................................................................................................... 8  
      2.1.2. Theories of suicidality ..................................................................................... 13  
      2.1.3. Suicide and healthcare ...................................................................................... 17  
      2.1.4. Suicide prevention ........................................................................................... 19  
   2.2. Patient safety .......................................................................................................... 23  
      2.2.1. A glance at the evolution of patient safety .................................................... 24  
      2.2.2. Patient safety theories ..................................................................................... 27  
      2.2.3. Adverse events and patient harm ................................................................. 30  
      2.2.4. How can we make healthcare safe? .............................................................. 34  
      2.2.5. Investigation of patient harm ......................................................................... 36  
      2.2.6. The Swedish context: supervisory authority and reporting system ............... 39  
   2.3. Patient safety and suicide ......................................................................................... 41  
      2.3.1. Suicide as patient harm ..................................................................................... 42  
      2.3.2. Current approaches to suicide investigation ................................................ 46  
      2.3.3. The Swedish context: reporting of suicides to the supervisory authority .......... 47  
3. Rationale ....................................................................................................................... 49
3.1. Aim and research questions .................................................... 49
4. Material and methods ................................................................. 51
  4.1. Epistemological research perspective .................................. 51
  4.2. Methods and material ............................................................ 53
    4.2.1. Study I and II ................................................................. 53
    4.2.2. Study III ................................................................. 60
    4.2.3. Study IV ................................................................. 63
  4.3. Ethical considerations ......................................................... 66
5. Results ..................................................................................... 69
  5.1. Study I .............................................................................. 69
  5.2. Study II ........................................................................... 72
  5.3. Study III ................................................................. 75
  5.4. Study IV ................................................................. 78
6. Discussion .................................................................................. 82
  6.1. What can we learn about suicide as an incident of patient harm
      from the current approaches to investigations of suicide? ............. 83
    6.1.1. Suicide cases reported to the supervisory authority as incidents
           of patient harm ................................................................. 83
    6.1.2. Learnings from the investigations of healthcare ................. 87
    6.1.3. How can we understand suicide as an incident of patient harm?
           ..................................................................................... 96
    6.1.4. Reflections on the consequences of the reporting of suicides as
           incidents of patient harm ..................................................... 101
  6.2. What changes in the approach to the investigations of suicide
      could advance learning and improvement in the care of suicidal
      patients? ............................................................................. 103
    6.2.1. Summarized reflections on investigation performance ...... 107
  6.3. Strengths and limitations of the studies ............................. 110
1. Introduction

Suicide is a global public health challenge, around 700 000 people die from suicide every year, thereby is suicide the tenth leading cause of death (World Health Organization, 2021). A large proportion of the individuals who die by suicide has been in contact with healthcare close in time before death (Ahmedani et al., 2019; Bergqvist et al., 2022; Chock et al., 2019; Stene-Larsen & Reneflot, 2019) and post-suicide studies have found that the vast majority suffered from psychiatric disorders (Arsenault-Lapierre et al., 2004; Bertolote & Fleischmann, 2002; Cavanagh et al., 2003). This suggests healthcare has an important role to play in suicide prevention (Kapur, 2009).

Healthcare has undoubtedly contributed to human health, wellbeing and longevity. However, healthcare has always been, and continues to be, a risk-laden sector. Modern diagnostics, therapies, and interventions are highly complex, and the patients are increasingly sick and frail. Globally, every year millions of patients suffer patient harm; injuries or death because of poor-quality or unsafe healthcare (World Health Organization, 2022), making patient harm likely to be one of the ten leading causes of death and disability (Jha et al., 2013). The harm can be caused of a range of different adverse events, and a large proportion is considered to be preventable (de Vries et al., 2008; Sauro et al., 2021).

Deaths occurring in healthcare services can be an affront to the expectation of high level of safety in healthcare. Intensified efforts to increase patient safety have been taken during the last decades. To investigate and report severe patient harms to identify risks and to improve patient safety have become one of the most widespread safety improvement strategies in healthcare (Leape, 2002).

In an effort to understand if failures in any area of the healthcare system have contributed to suicide, the Swedish National Board of Health and Welfare decided in 2006 that all suicides that occurred while the person was receiving healthcare or within four weeks after healthcare contact, were required to be
investigated and reported by the healthcare provider to the supervisory authority. This was regardless whether the provider assessed that the suicide had been possible to prevent if different actions had been taken by the healthcare or not. The obligation was withdrawn in 2017, and now only suicides regarded as a severe patient harm, i.e. preventable if other actions had been taken by healthcare, are to be reported to the supervisory authority.

Suicide is usually the final outcome of several integrating factors over time. Only a small proportion of suicides is committed in hospitals, most occur in the home of the patient without any witnesses or staff around. This makes suicide as incidents of patient harm somewhat different from most other kinds of incidents related to healthcare, and there still is poor knowledge about this phenomenon. Combining research on suicide prevention with patient safety paradigms has been suggested to provide new opportunities and interventions to facilitate to close the gap between evidence, policy, and practise in the efforts to reduce the number of suicide (Quinlivan et al., 2020).

The overall aim of this thesis was to increase the knowledge and understanding of suicide as an incident of patient harm, and to find possibilities of changes in the approach to suicide investigations which could contribute to increased learning and improve suicide prevention in healthcare.

Outline of the thesis

Below follows a brief review of key words and concepts, and how they are used in this thesis. In the next chapter, I will frame the theoretical background of suicidology and patient safety that I found to be of relevance for my research. The Swedish context of supervisory authority and reporting system is described. The theoretical background is followed by the rational and aim for the thesis. Descriptions of used methods, epistemological research perspective, and ethics follow. After this, I will present the results of the studies included in this thesis. The discussion of the results relating to the research questions and the used methods follow. Finally, I will make an effort to summarize the findings into conclusions and point out suggestions for practical implications, possible changes in policy and practice, and issues for future research.
1.1. Nomenclature

This thesis merges two interdisciplinary fields of science; suicidology and patient safety. Each embraces terminologies that can have different meanings in different contexts, and some are also controversial and subject to debate. Below follows a brief presentation of key words and concepts, and how they are used in this thesis. A deeper exploration is beyond the scope of this thesis and available in references.

1.1.1. Suicidology

Suicidology is the term used for the science field of suicidal behaviour.

Suicide is defined as deliberate self-inflicted bodily injury causing death. Suicide comes from the Latin word suicidium, and is composed of su’i meaning ‘of oneself’ and caedere meaning ‘to kill’.

Suicidality refers to a wide range of phenomena, from suicidal ideation, suicide attempts, and death by suicide. Suicidal behaviour is a synonymous concept that refers not only to overt suicidal acts such as suicide attempts or death by suicide, but also views suicidal thoughts as an inner behaviour (Mann, 1998). Suicide process is in this thesis used for the progress of suicide behaviour, from the first onset of suicidal ideation and thoughts of suicide as a possibility, to the appearance of suicide plans and attempted suicide (Wasserman, 2016).

Suicidal ideation refers to thoughts of suicide, including planning (Silverman et al., 2007b).

Suicide intent refers to the aim of the suicidal behaviour and assumes a conscious desire or wish to end life, some perception of available means, and knowledge of how to use them for the desired outcome (Silverman et al., 2007a). The intent, the seriousness or intensity of the person’s wish to take his life, can change rapidly. A systematic review of the use of suicide intent in research (Hasley et al., 2008) found that the most common approach to operationalize the suicide intent was by using Beck’s Suicide Intention Scale (SIS) (Beck et al., 1979).
**Suicide attempt** is in this thesis referring to a self-damaging act carried out with at least some intention to end one’s life (Mann, 1998). Characteristics of persons that die by suicide and persons that made one or several suicide attempts are overlapping and share common psychiatric diagnostics and historical features, but are distinguished by gender (more men die by suicide and more women make suicide attempts) (Beautrais, 2001). Suicide behaviour without any intention to die is defined as *self-harm*; self-inflicted, potentially injurious behaviour without any suicidal intention (Silverman et al., 2007b). However, the motivation of self-harm is not always very clear, and the intention is sometimes ambivalent, and there is a debate whether a suicide attempt shall be defined from intention or using the broader term *deliberate self-harm* (Hawton et al., 2003; Nock et al., 2008; Skegg, 2005). If the self-harm results in death, it is classified as a self-inflicted unintentional death, e.g., accidental poisoning.

The focus in this thesis is deliberate suicide.

### 1.1.2. Patient safety

*Patient safety* is by WHO defined as a healthcare discipline that aims to prevent and reduce risks, errors and harm that occur to patients during provision of healthcare (World Health Organization, 2022). WHO states that a cornerstone of the discipline is continuous improvement based on learning from errors and adverse events.

*Error* is here defined as the failure of a planned action to be completed as intended, or the use of a wrong plan to achieve the aim (Kohn, 2000). Errors can occur in all stages and processes of care, from diagnosis, to treatment, and preventive care. Errors can be due to execution or planning. Not all errors result in harm.

*Harm* is here any injury affecting the patient.

*Adverse event* is any unintended injury or complication in healthcare, serious or not serious, expected or not expected, and not due to the underlying condition of the patient (Vincent et al., 1998). Not all are preventable.
**Patient harm** is an adverse event affecting a patient in contact with healthcare that could have been avoided if appropriate actions had been taken by healthcare, i.e., the harm was preventable. However, the preventability is constantly changing as medical knowledge and patient safety science evolve (Vincent & Amalberti, 2015).

**Severe patient harm** is a patient harm that is permanent or not minor, or that has led to a significantly increased need for care or death of the patient, and that could have been avoided if appropriate actions had been taken by healthcare professionals (*The Swedish Patient Safety Act (SFS 2010:659)*, 2010). According to Swedish law, all incidents of severe patient harm are to be reported to the supervisory authority.

**Internal investigation** is the term used in the Swedish Patient Safety act for the investigation the healthcare provider perform after an incident in healthcare. The aims of the investigation are to identify the causes and contributory causes of the incident and to identify actions of improvement that should prevent the same incident from happening again. The internal investigation is sent to the supervisory authority for supervision when the healthcare provider reports a severe patient harm.

**Supervisory authority** is a regulatory authority. Two are of interest here:

- **The Health and Social Care Inspectorate [Inspektionen för vård och omsorg, IVO]** is since 2013 a government agency under the Ministry of Health and Social Affairs in Sweden responsible for supervising healthcare, social care, and staff. The agency has the role “to ensure that reported adverse events have been investigated to a necessary extent, and that appropriate actions have been taken by the healthcare provider to reach a high level of patient safety” (*The Swedish Patient Safety Act (SFS 2010:659)*, 2010).

- **The National Board of Health and Welfare [Socialstyrelsen]** is a government agency under the Ministry of Health and Social Affairs in Sweden that produces and develops statistics, regulations and knowledge for medical care, health, and social services. Before 2013, this agency also had the role to investigate incidents of severe patient harm.
2. Theoretical background

In this chapter I will describe the theoretical backgrounds I found to be of relevance for my research. First, I give the theoretical outlines for the essentials of suicidology; epidemiology, theories, healthcare, and prevention. In the second part of this section, I give a brief background of the evolution of patient safety, followed by an overview of the current theories of patient safety, patient harm, investigations of incidents in healthcare, and then a description of the Swedish reporting system. In the last part, I will frame suicide as an incident of patient harm.

2.1. Suicidology

“There is but one truly serious philosophical problem and that is suicide. Judging whether life is or is not worth living amounts to answering the fundamental question of philosophy.”

Albert Camus (Camus, 1955)

Suicide is a phenomenon described through all times and different contexts. Suicide not only affects the individual, but leaves a mark on the family, friends, and the surrounding. Due to its complex nature, there has been a vast range of viewpoints and attitudes throughout history, and there still are.

Arguments against the acceptability of suicide have a long tradition in philosophy. Some examples are the philosopher Plato (428–348 BCE) that considered suicide disgraceful and an offence against society. He recognized some exceptions: the moral corruption of the individual’s mind, as a response to severe adverse events, self-killing by judicial order, and due to shame of participating in unjust actions (Minois, 1999). Aristotle (384–322 BCE) clearly condemned suicide as a cowardly act that was wrong to the state, and Kant stated suicide to be debasing humanity in one’s person (Kant, 1785).

The religions have different views upon suicide, mostly negative and regarding suicide as taboo (Gearing & Lizardi, 2009). Some religions consider
that our life does not belong to ourselves, instead our life belongs to God, and committing suicide thereby is a severe sin. Following this and the philosophical influences above, suicide has been regarded as a criminal act in many countries. The criminalization of suicide in Sweden disappeared in 1864, and in the turn of the 1900 century suicide victims could receive an ordinary funeral in church (Oden, 2005).

Libertarian perspectives lift the freedom of choice by individuals to determine whether or not to live or die, and claim suicide to be reasonable to avoid pain. The Stoic school, founded in Greece by Zenon around 400 BCE, emphasized living in harmony with nature and freedom based on rational choice (Crone, 1996). Accordingly, suicide could be defended as an act worthy of respect in some situations, for example to avoid being forced to perform an unlawful act, extreme poverty, or chronic physical or mental illness (Retterstøl, 1998). One of the first described suicides in literature was the death of Lucretia in 510 BCE, stubbing herself to death after being raped. There are suicide cases in history that are described as brave, even honorable acts, such when statesmen and soldiers commit suicide in front of the threat being surrendered to the enemy (Retterstøl, 1998; Tondo, 2014).

Also in literature, suicides have been glamorized and romanced with strong and forbidden love as common ingredients. The suicides committed in William Shakespeare’s *The Tragedy of Romeo and Juliet* are well-known (Shakespeare, 1872). The suicide of the heartbroken Werther in *The Sorrows of Young Werther* by Johann Wolfgang von Goethe, first published in 1774, (von Goethe, 1774) led to some of the first known examples of copycat suicides (Thorson & Öberg, 2003).

Nowadays, the ethical debate on suicide in western countries is centred on issues of personal autonomy and freedom versus healthcare professionals’ responsibility towards suicidal individuals. In the developing countries the issues extend beyond individual level and relate more to macro level factors of equity, justice, and social conditions related to mental illness and suicidal behaviour (Khan & Mian, 2010).

Suicide may be the end of long-lasting unbearable pain and affliction, and in some countries, e.g., in Switzerland, Belgium and Luxembourg, assisted suicide by healthcare professionals is allowed in cause of specific
circumstances, such as specific severe disorders. The coexistence of tolerance for assisted suicide along with efforts on suicide prevention and possibilities to change the patient’s attitude to suicide may create a tension between underlying values and may also trigger ethical uncertainty among healthcare professionals (Reiter-Theil et al., 2018). As the underlying aim of this thesis is to enhance knowledge of suicide prevention, further considerations of assisted suicide are considered to be beyond the scope.

Nowadays we know that very few suicides are rational acts. Most are the consequence of mental illness and desperation. Worldwide, every 40 seconds one person dies by suicide, one in 100 deaths is by suicide, making suicide considered as a serious public health problem by World Health Organization (WHO) (World Health Organization, 2021). WHO states that suicides are preventable with timely, evidence based interventions at population, subpopulation, and individual levels.

2.1.1. Epidemiology

Suicide is the tenth leading cause of death worldwide, accounting for around 700,000 deaths annually (World Health Organization, 2021). Rates of suicide vary greatly between countries, with the largest burdens falling in low- and middle-income countries (Hawton & van Heeringen, 2009; World Health Organization, 2021). Overall, suicides account for 1.4% of premature deaths worldwide. Differences arise between regions and countries with respect to gender, age, socioeconomic status, method of suicide, and access to healthcare.

Within Europe, suicide rates are generally higher in the northern countries than in the southern. According to the Swedish National Board of Health and Welfare Mortality Registries, annual deaths from suicide in Sweden are approximately 1200 (The National Board of Health and Welfare, 2022). There has been a decline since the 1980’s, but this decline has levelled off during the last 20 years, and there is no decline among the youngest, the 15-29-years old.

Gender. Worldwide, suicide is three times more common in men than females. In western countries the male-to-female ratio is between two and four to one (World Health Organization, 2021). Asian countries typically have lower
ratios and in China more women than men die by suicide (Phillips et al., 2002; World Health Organization, 2021). The ratio in Sweden is two to one in adults (The National Board of Health and Welfare, 2022). The difference between the genders raises with the age, and there is no difference among the youngest.

Regarding nonfatal suicide behaviour and ideation, females generally have higher rates (Nock et al., 2008). This gender gap, i.e., the overrepresentation of females in nonfatal suicidal behaviour and the preponderance of males in suicide, has been described as the gender paradox of suicidal behaviour (Canetto & Sakinofsky, 1998). Several explanations to this gap have been suggested; men choose more lethal means, men have stronger suicide intention, cultural aspects of suicide being less socially accepted among women, and longer duration of the suicide process in women enabling care (Canetto & Sakinofsky, 1998; Neeleman et al., 2004; Schrijvers et al., 2012).

Age. Suicide occurs throughout the lifespan. More than half of all suicides occur before the age of 50 years, and suicide was the fourth leading cause of death among 15-29-year-olds globally in 2019, but the highest rates are in the elderly people in most countries (World Health Organization, 2021). Significant transitions or changes in life situations, such as entering or leaving periods of development, e.g., puberty, middle age, the menopause, or old age, are suggested to be risk situations for vulnerable individuals (Cupina, 2009; Wasserman, 2016). In the elderly group, suicides have been shown to be associated with depression, physical illness, living alone, and recent bereavement (Fässberg et al., 2012; Waern et al., 2003; Wiktorsson et al., 2010). In the group of 15-29-year-olds, suicides are associated with schizophrenia, personality disorder, unemployment, and substance abuse (Hunt et al., 2006).

Methods. Globally, hanging, ingestion of pesticide, and firearms are the most frequent used means for suicide (World Health Organization, 2021). The availability affects the choice of method, consequently the most used methods differs between countries. In the USA, firearms are the most common method for suicide (Brent & Bridge, 2003), while in many developing countries ingestion of pesticides is the main method (Gunnell et al., 2007). Generally, men use more violent methods, like hanging and shooting, to a larger extent than women, who use intoxication (Choo et al., 2019; Denning et al., 2000;
Suicide associated factors

Suicidal behaviours are heterogeneous and complex, influenced by numerous factors; biological, psychological, and social, interacting over time (Hawton & van Heeringen, 2009; Mann & Currier, 2010; Nock et al., 2008; Turecki et al., 2019; van Heeringen & Mann, 2014). The most consistent and robust support for factors associated with suicide in literature are for mental disorders, past suicide attempts, and psychosocial problems (Van Orden et al., 2010). However, there are multiple more factors associated with higher risk for suicide, and individuals who die by suicide usually present with numerous risk factors, rather than one single risk factor in isolation (Hawton & van Heeringen, 2009; Kessler et al., 2015). Further, each factor may have a complex relation with suicidal behaviour, dependent on other circumstances. Risk factors in this context are variables that are associated with an increased probability of suicidal behaviour with suicide intent. A brief overview follows below.

Mental disorders. Post-suicide studies have found that the vast majority of those who die by suicide have psychiatric illnesses at the time of their deaths (Arsenault-Lapierre et al., 2004; Bertolote & Fleischmann, 2002; Cavanagh et al., 2003; Favril et al., 2022; Harris & Barraclough, 1994; Hunt et al., 2006). Certain mental disorders confer higher risk for suicidal behaviour than others do. Following disorders are associated with particularly elevated rates of suicide: major depressive disorder, borderline personality disorder, schizophrenia, and substance abuse (Favril et al., 2022). Comorbidity of psychiatric disorders greatly increases the risk of suicide (Cavanagh et al., 2003; Hawton et al., 2013; Nock et al., 2010). Data indicate that the disorders make different impacts on suicidality. For example, depression is associated with the development of desire for suicide, while other disorders, marked by
agitation or impulse control deficits (e.g., bipolar disorder and substance abuse), are associated with increased likelihood of acting on suicidal thoughts (Nock et al., 2009).

Prior suicide attempt. A nonfatal suicide attempt is the strongest known clinical predictor of suicide, around 10% of the individuals who made an attempt die by suicide (Bostwick et al., 2016; De Moore & Robertson, 1996; Owens et al., 2002; Suokas et al., 2001). The risk is highest close in time after the attempt, but the elevated risk withstands for decades (Suominen et al., 2004; Tidemalm et al., 2008). Stronger suicide intent has shown to imply higher risk (Harriss et al., 2005; Tidemalm et al., 2008), and individuals who made prior violent suicide attempts are at particularly high risk (Runeson & Lichtenstein, 2016; Runeson et al., 2010). Up to half of people who die by suicide, do so by their first attempt (Probert-Lindström et al., 2021; Rudd et al., 1996). However, by far, most persons who make a suicide attempt survive, and die by other causes than suicide.

Psychosocial features. Lack of social support, living alone, and unemployment are associated with higher risk for suicide (Appleby et al., 1999; Hawton & van Heeringen, 2009; Heikkinen et al., 1995; Luoma & Pearson, 2002). Family discord may also increase risk, particularly in elderly (Rubenowitz et al., 2001). Further, suicide is commonly preceded by stressful life events, particularly interpersonal (divorce, death) or health-related events (Cavanagh et al., 1999; Cupina, 2009; Favril et al., 2022; Phillips et al., 2002).

Family history of suicide and biology. Suicide in relatives is associated with higher risk for suicide (Agerbo, 2005; Phillips et al., 2002), independent of familial cluster of mental disorders (Nanayakkara et al., 2013; Qin et al., 2002; Roy & Janal, 2005). Studies of adopted children (Wender et al., 1986) and twins (Glowinski et al., 2001; Roy et al., 1991) indicate that suicidal behaviour to parts might be genetically transmitted. Neurobiological research has shown changes in central neurotransmission functions (Mann, 2003; Mann et al., 2001; Åsberg et al., 1981), in the stress-system (Westrin, 2000; Westrin & Niméus, 2003), and in the immune system (Keaton et al., 2019; Lindqvist et al., 2009) to be linked to suicidal behaviour. Increased knowledge of the biological alterations and brain imaging might open for new methods to identify persons at high risk for suicide and also new approaches for reducing
suicidality in the future (Brent et al., 2010; van Heeringen & Mann, 2014). Childhood trauma of different kinds (abuse, deaths, parent neglect) are associated with suicidal behaviour (Brodsky & Stanley, 2008; Dube et al., 2001; Roy & Janal, 2005; Stein et al., 2010) and long-term stress-system alterations (Sunnqvist et al., 2008).

Severe somatic disorders (Bolton et al., 2015; Harris & Barraclough, 1994) and pain (Racine, 2018; Tang & Crane, 2006) are associated with suicide, and persons who self-harm are at up to 25 times higher risk of suicide (Bergen et al., 2012; Neeleman, 2001). Hopelessness, defined as pessimism for the future, has been shown to be a predictor of suicidal behaviour (Brezo et al., 2006; Hawton et al., 2005; McMillan et al., 2007; Nock & Kazdin, 2002).

Factors related to personality are of interest for suicidality because they are fairly stable in adulthood and affect cognition and emotions (O'Connor & Nock, 2014). Perfectionism, the belief that other persons hold unrealistic high expectations of you, is associated with suicidal thoughts especially when internalized as self-criticism (O'Connor, 2007; Roxborough et al., 2012). Impulsivity might be an important factor for suicidality, particularly among young people (Hawton et al., 2012; O'Connor et al., 2012), as well as aggression (Hartley et al., 2018).

Several cognitive factors have been associated with suicidal behaviour. Cognitive rigidity, or inflexibility, can lead to the thought that suicide is the only option (Miranda et al., 2012). Rumination, repetitive focus on own symptoms of distress, is linked to suicidal behaviour (Morrison & O'Connor, 2008). Poor capability of interpersonal problem solving and coping is associated with suicidal behaviour (Guerreiro et al., 2013; Pollock & Williams, 2004). A recent published Swedish study showed that avoidant coping strategies, i.e., the person refuses, pretends, or acts as if a problem does not exist, is associated with increased suicidal ideation (Ambrus et al., 2020).

Factors associated with protective effects for suicide

Factors that can serve protective against suicidal behaviour could be the absence or the opposites of the factors associated with an increased risk for suicide described above, and have not been studied to the same extent as those associated to higher risk (Hawton & van Heeringen, 2009; O'Connor & Nock,
2014; Wasserman, 2016). Below follow some examples of studied factors associated with lower risk for suicidal behaviour.

**Social support and network** have been described to be protective against suicidality (Luoma & Pearson, 2002; Turvey et al., 2002). *Children in the home* were associated with lower suicide risk for the mother (Høyer & Lund, 1993), with the exception for women with postpartum psychosis (Appleby et al., 1998).

**Life satisfaction** (Wasserman, 2016) and **optimism**, reflecting a positive attitude or mood regarding the future, have been shown to buffer the association between hopelessness and suicidal ideation (Hirsch & Conner, 2006; Hirsch et al., 2007). *Reasons for living* were shown to serve as protective mitigating factors, especially for women, against suicide attempt (Costanza et al., 2019; Lizardi et al., 2007; Wang et al., 2007; Wang et al., 2012).

*Religion.* Religiosity has been shown to be associated with reduced risk of suicidality (Dervic et al., 2004; Gearing & Alonzo, 2018; Wu et al., 2015). Most religions have strong sanctions against suicide, and the degree of religiosity seems to be related to the degree of protection from suicidality, with greater religiosity predicting decreased risk of suicidal behaviour (Gearing & Lizardi, 2009). Involvement in organized religions also provides the opportunity to develop an extended social network, which can serve protective against suicidality.

### 2.1.2. Theories of suicidality

Numerous comprehensive models of suicidality have been presented, accounting for several risk and protective factors, along with the prevalence of suicidal behaviour (Ellis & Rutherford, 2008; O’Connor, 2011). One of the most known models is the **diathesis-stress model**, from which most contemporary theories origin (Joiner, 2005; Mann & Currier, 2010; Mann & Arango, 1992; Mann et al., 1999; O’Connor & Nock, 2014; Wasserman, 2016). The model describes **diathesis** as the individual vulnerabilities (i.e., heredity and personality characteristics) for developing suicidal ideation when activated by stress. **Stressors** could for example be relational crises,
unemployment, and loss of someone dear. The model implies that suicidal behaviour is expressed when external stressors exceed what the individual vulnerability can tolerate. The model is structured to describe (i.e. model) suicidal behaviour, compared to the theories below that are structured to explain (i.e. predict) suicidal behaviour.

The theories of suicidal behaviour can serve as aids to understand how the complex interplay of factors combine into suicidality, and guide suicide prevention efforts (Klonsky et al., 2018; Ngwena et al., 2017; O'Connor & Nock, 2014). The forms of suicidal behaviour (ideation, plans, and acts) are related, i.e. suicide ideation is a prerequisite for suicide plans, and suicide plans are often a prerequisite for suicide attempts (Joiner, 2005; Klonsky & May, 2015; O’Connor, 2011). However, the majority of individuals who think about or plan a suicide attempt never make a suicide act (Bostwick & Pankratz, 2000; Nock et al., 2008), suggesting that a better understanding of variables associated with the progression from ideation to act is crucial in predicting and preventing suicide (Klonsky et al., 2017).

Ideation-to-action theories
During the last decades, theories with focus on the psychological aspects of suicidal behaviour have evolved from the diathesis-stress model (Nock et al., 2008; O’Connor, 2011; Turecki & Brent, 2016; van Heeringen & Mann, 2014). The current predominant framework is the ideation-to-action (ITA) framework. The ITA framework includes the interpersonal theory of suicidal behaviour (ITPS) (Joiner, 2005), the integrated motivational and volitional model (IMV) (O’Connor, 2011), the three-step theory (3ST) (Klonsky & May, 2015), and the fluid vulnerability theory (FVT) (Rudd, 2006). There are considerably overlaps between the theories, which agree that a) the development of suicidal ideation and b) the progression from ideation to suicide acts are distinct phenomena with distinct explanations and predictors (Klonsky et al., 2018).

The development of suicidal ideation
The ITPS suggests that the simultaneous combination of thwarted belongingness (the experience that one is alienated from friends, family, or other valued social circles) and perceived burdensomeness (the view that
one’s existence is a burden on friends, family members, and/or society) and being hopeless convinced that these states will not change, leads to the development of suicidal ideation (Joiner, 2005; Van Orden et al., 2010).

The IMV model describes the emergence of suicide ideation through the feelings of defeat and humiliation following certain moderators, including the IPTS concepts of thwarted belongingness and burdensomeness, but also poor problem solving, poor coping, poor social support, which cause feelings of entrapment (i.e., unable to escape from the stressful circumstances) (O’Connor, 2011).

The 3ST suggests that the simultaneous combination of pain (physical or psychological) and hopelessness causes suicidal intention, and that suicide ideation escalates when pain exceeds connectedness (to loved ones, any sense of meaning, or purpose) (Klonsky & May, 2015).

The FVT differentiates from the other ITA theories by its focus on the dynamic nonlinear process of suicide risk over time and broader approach. The FVT conceptualizes suicide risk along two dimensions: baseline, which refers to the chronic or stable properties of suicide risk that persist over time, and acute, which refers to the dynamic properties of suicide risk that are reactive to external forces (Rudd, 2006). The baseline dimension is therefore influenced by risk factors and protective factors that are historical and/or relatively static in nature (e.g., genetics, trauma, demographics, and previous suicidal behaviour), and corresponds to the homeostatic point of equilibrium for an individual’s low risk state. The acute dimension, by contrast, is influenced by risk factors and protective factors that fluctuate in response to environmental contingencies and/or internal experiences (e.g., mood, hopelessness, substance use), and corresponds to the within-person differences in risk. The FVT uses the concept suicide mode to describe suicide as the result of complex interactions across multiple different combinations of triggers, predispositions, and risk factors under different circumstances (Rudd, 2006). Suicide ideation is impacted by the ratio of an individual’s predispositions relative to experienced triggers, and the degree of match between stressful events and the individual’s predisposing vulnerabilities. Following this, the FVT does not designate any particular variable to be less or more important than any others in the development of suicide ideation. The specific variables
pointed out by the IPTS, IMV, and 3ST are assumed to reflect only some of the possible pathways to suicidal behaviour.

**The progression from ideation to suicide acts**

Suicidal ideation is a necessary though not sufficient cause for making a suicide attempt. It is when a person with high suicidal desire also has the capability to make a suicide attempt, the risk of suicide is increased. Suicide capability, the factor that explains whether a person acts on the suicidal desire against the natural survival instinct, is suggested to be one of the few factors that distinguishes people who attempt suicide from those who with ideation (May & Victor, 2018).

*The ITPS* introduced the concept of *acquired capability* (i.e. the ability to face the fear and pain associated with death) to be the necessary variable for the transition from suicide desire to suicide attempt (Joiner, 2005). Exposure to and encounter with previous painful experiences increase the tolerance for physical pain through habituation, thereby ‘acquiring’ the capability. Nonfatal suicide attempts can decrease fear and increase the capability to use more lethal means in future attempts.

*The IMV and 3ST* elaborates the concept of acquired capability to include dispositional and practical contributors to capability (Klonsky & May, 2015; O'Connor & Nock, 2014). The dispositional contributors (e.g., genetics, personality traits) are those that influence baseline levels of suicide capability. The acquired contributors, such as those described by the ITPS, are repeated experiences that unblock natural barriers to suicide (e.g., fear of death and pain), thereby increasing suicide capability. Practical contributors are concrete factors that make an attempt easier, such as access to lethal means.

*The FVT* suggests that once the suicide diathesis is triggered, series of other cognitive, affective, behavioural, and physiological processes unfold and suicidal ideation and behaviour become active and more intense (Rudd, 2006). As an emergent phenomenon, suicidal behaviour is larger than the sum of its parts. The suicidal mode implicates the importance of multiple different types of interactions: within individuals among the various components of the suicidal mode (e.g., cognition impacts emotion, emotion impacts physiology, cognition and emotion drive behaviour), between individuals and their
environment (e.g. triggers), and between the individual and his history with the environment (e.g. predispositions).

Research and criticism

The ITA theories have been examined empirically in several studies. Notably is that the empirical studies of the theories are mostly performed as surveys, with the majority of responders being women and students (Dhingra et al., 2016; Dhingra et al., 2019; Yang et al., 2019). As there are significant overlaps between the theories, some support can be related to the ITA framework (Klonsky et al., 2018).

The ITA theories have been criticized to oversimplify the complexity of suicidal behaviour, and to be linear (with the exception of the FVT) when suicidal behaviour should be understood in a life-course perspective with developmental and relational issues taken into consideration (Franklin et al., 2017; Hjelmeland & Knizek, 2019). Further, the theories are unable to explain the gender distribution and seasonal variation, and lack the level of precision needed to prospectively predict when suicidal acts will occur (Bryan & Rudd, 2016). Even though the theories may be summarized briefly, there are implicit dynamic complexities incorporated (Bryan & Rudd, 2016; Klonsky, 2019; Van Orden et al., 2010), and the complexity of the phenomenon suicide and the great inter-individual personal and environmental differences among human beings, suggest there is need for more than one single model or theory to understand and explain the complexity (Abrutyn & Mueller, 2021; Berman et al., 2000; Smith et al., 2020).

2.1.3. Suicide and healthcare

A large proportion of deaths by suicide occur in individuals who have ongoing contact with psychiatric care or other healthcare providers (Ahmedani et al., 2014; Ahmedani et al., 2019; Chock et al., 2019; Walby et al., 2018). Proportions and kinds of healthcare contacts differ between countries and with respect to gender, age, socioeconomic status, and access to healthcare. In western countries, with relatively easy access to healthcare, a majority of suicide victims have been in contact with healthcare services during the year before death (Ahmedani et al., 2014; Walby et al., 2018). An often cited review article based on 40 studies of suicides, found that approximately 45%
of victims had visited primary care and about 20% visited psychiatric care the month before suicide (Luoma et al., 2002). A similar, more recent review covering 15 countries in North America, Europe, Australia, and Asia showed that 80% of the individuals who died by suicide were in contact with primary health care within one year and 44% within one month before death (Stene-Larsen & Reneflot, 2019). This study found that 31% received psychiatric care within one year before the suicide, 21% within one month, and 10% during the final week of life.

In a Swedish context, a registry study published in 2010, found that between 1991 and 2003, 25% of individuals who died by suicide had been treated in hospital for a psychiatric diagnosis the year before they died by suicide, even though the number of psychiatric hospitalizations diminished during the same period (Reutfors et al., 2010). A recently published study of healthcare utilization two years prior to suicide in 2015 in Sweden showed that over 90% had been in contact with any healthcare during the 24 months prior to suicide, and 60% within four weeks (Bergqvist et al., 2022). Further, almost one-third was in contact with psychiatric services within the four weeks prior to suicide, and almost one-fifth during the preceding week. The proportion of women in contact with psychiatric services was higher than among men, and a larger proportion of younger individuals (<65 years) was in contact with psychiatric services compared to older individuals (≥65 years), who had more contacts with primary care.

Still, the proportion of persons with suicidality not seeking help is not small. Reported barriers by patient experiencing suicidal behaviour to seek healthcare have been shown to involve low perceived need, desire to handle the problem on their own, distrust in treatment, structural barriers (e.g., financial, availability), and stigma (Bruffaerts, 2011).

Suicidality is one of the most common causes of psychiatric inpatient care which is also the most intensive care-intervention that can be offered to those with acute suicide risk (Wasserman et al., 2012). Two sharp peaks of risk for suicide around psychiatric hospitalizations have been shown; one in the first week after admission and another in the first week after discharge (Qin & Nordentoft, 2005). The risk is also higher after short durations of inpatient care, unplanned discharge, psychiatric comorbidity, and not linked to any
outpatient care after psychiatric inpatient care (Haglund et al., 2019; Olfson et al., 2016; Qin & Nordentoft, 2005; Runeson & Lichtenstein, 2016; Tidemalm et al., 2008).

2.1.4. Suicide prevention

Suicide risk assessment

Human behaviour is inherently complex, multifactorial, and contextual, impacted by countless interacting psychological, physical, and social factors. Following this, the prediction of specific human behaviour, such as suicide, is by nature a very challenging task. Prediction of suicide is particularly difficult because individual risk factors account for a small proportion of the variance in risk and lack sufficient specificity, resulting in high rates of false positive tests (Large, 2011; Oquendo et al., 2006; Runeson et al., 2017). Persons assessed as being at high-risk rarely die by suicide, and those assessed as low-risk patients are still at risk of dying by suicide (Large et al., 2016). Further, despite presence of suicide ideation for a long time, the eventual suicidal act is often impulsive to some extent (Deisenhammer et al., 2009; Kleiman et al., 2017). Predictions in the complex, real-world contexts are limited because of the thousands of potential influencing variables, reinforcers and punishers, acting at different times and in different ways. In addition, what is reinforcing for one person may be punishing for another (Fong et al., 2016).

Even if suicides cannot be accurately predicted and, in some cases, neither prevented, an individual’s suicide risk can be assessed and a treatment plan can be designed with the goal to reduce that risk by targeting risk factors and enhancing protective factors (American Psychiatric Association, 2003; Klonsky et al., 2021; O’Connor & Kirtley, 2018; The Swedish Psychiatric Association, 2013; Wasserman et al., 2012). Following this, the suicide risk assessment should be central in the daily work with suicide prevention.

The performance of the suicide risk assessment

The suicide risk assessment should include the patient’s clinical presentation and suicidality, psychiatric illness, history of suicidality, history of medical diagnoses and treatments, family history of suicidality and mental illness, individual strengths and vulnerabilities (e.g., coping skills, personality traits),
and psychosocial situation (American Psychiatric Association, 2003; The Swedish Psychiatric Association, 2013; Wasserman et al., 2012). The clinical interview is the most important part of the assessment, and should be performed in a quiet, secluded area and in an atmosphere of empathy. If possible, the information given by the patient should be corroborated with collateral sources, such as family members or friends (Magne-Ingvar & Öjehagen, 1999; The Swedish Psychiatric Association, 2013; Wasserman et al., 2012).

The clinical interview with a suicidal person is connected with challenges. Even though studies have shown that patients often have told healthcare professionals about their suicidal thoughts before suicide, not all persons disclose their suicidal ideations (Mérelle et al., 2018; Pearson et al., 2009; Saini et al., 2016). The communication approach taken by the healthcare professionals, feelings of shame and trust issues, and lack of belief that other persons or healthcare could be of any help, have been described to inhibit patients to verbalise their suicidal ideations (Berglund et al., 2016; Ganzini et al., 2013; Ghio et al., 2011; Hagen et al., 2018; Richards, 2019). A trustful relationship between the patient and the professional is thus essential. A connection between the severity of mental illness and the lack of verbal communication of suicidal ideation has been indicated (Levi-Belz et al., 2019), and also, a better outcome for patients that talk about their suicidality (Frey et al., 2016).

Clinical attention should focus on improving the interaction and therapeutic alliance with the patient to foster hope, reduce the patient’s distress and suffering, rather than attempting to make a suicide prediction (Large, 2018). An assessment of the patient’s current needs and identification of factors that may be modifiable to reduce the suicide risk should follow, and treatment should attempt to mitigate or strengthen those factors, to decrease the suicide risk (Wasserman et al., 2012). Non-modifiable factors, e.g., genetics, patient history, family history, and demographic characteristics, should bring attention and awareness to potential suicidality, and are parts in the overall suicide risk assessment (American Psychiatric Association, 2003; Bryan et al., 2020).
Suicide risk assessment scales

To facilitate the clinical assessment of suicide risk, interview and assessment instruments have been developed. Examples are the Sad Persons Scale for Assessing the Risk of Suicide (Patterson et al., 1983), the Hamilton Depression Rating Scale (Hamilton, 1960), and the Beck Hopelessness Scale (Beck et al., 1974). The scales may be used as aids for the assessment, but should not be used as predictive instruments or as substitutes for a thorough clinical evaluation, as they lack predictive validity (American Psychiatric Association, 2003; Carter et al., 2017; Runeson et al., 2017; The Swedish Agency for Health Technology Assessment and Assessment of Social Services, 2015; The Swedish Psychiatric Association, 2013; Wasserman et al., 2012).

Evidence based suicide prevention interventions

The multifaceted complexity of suicide and low base rates make research on suicide prevention challenging (Turecki & Brent, 2016). Thus, the evidence of suicide prevention methods has grown last decades and a large proportion of suicides is now considered to be preventable by timely, evidence based interventions (Hawton & van Heeringen, 2009; Mann et al., 2021; Wasserman et al., 2012; World Health Organization, 2021). Below follows a brief overview of current evidence based suicide prevention interventions.

Restricting access to means has repeatedly been shown to effectively reduce suicides, particularly regarding highly lethal and widely available means, e.g., firearms and pesticides (Anglemyer et al., 2014; McPhedran & Baker, 2012; Pirkis et al., 2013; Sarchiapone et al., 2011; Yip et al., 2012). Examples in healthcare are removal of ligature points in the hospital wards that has shown to decrease the overall inpatient suicide rates (Kapur et al., 2013; While et al., 2012), smaller packets of analgesics and the withdrawal of particularly toxic analgesics (Hawton et al., 2009; Hawton et al., 2011; Hawton et al., 2012; Hawton et al., 2013).

Education of doctors in primary care and non-psychiatrists physicians to better screen and treat depression has shown to lower suicide rates (Henriksson & Isacsson, 2006; Oyama et al., 2006; Rutz, 2001; Rutz et al., 1989). Repeating the education has been shown to reduce suicide rates progressively over years (Hegerl et al., 2010; Szanto et al., 2007).
Psychopharmacology. There is evidence for the value of psychopharmacology for suicide prevention in specific patient groups, even if results diverse (Mann et al., 2021; Wasserman et al., 2012; Zalsman et al., 2016). Treatment with lithium for bipolar disorder has shown to reduce suicide risk (Baldessarini et al., 2006; Cipriani et al., 2013). Meta-analyses of randomized controlled studies of antidepressant drugs in mood and other psychiatric disorders have shown diverse results, and regard mostly reduction of suicide ideation and behaviour (Fergusson et al., 2005; Gibbons et al., 2012; Gunnell et al., 2005). Ketamin, a NMDA glutamate receptor antagonist, has showed to reduce suicide ideation within hours in depression (Fan et al., 2017; Price et al., 2014) and bipolar disorder (Grunebaum et al., 2017), however more research is needed to confirm the effect on suicide behaviour (Mann et al., 2021; Witt et al., 2020).

Psychotherapies. There is a growing body of evidence for psychotherapies reducing suicide behaviour by focusing the therapy on suicidal behaviour (O'Connor & Nock, 2014). Most supporting research concern cognitive behaviour therapy (CBT) (Brown et al., 2005; Rudd et al., 2015) and dialectical behaviour therapy (DBT) (Linehan et al., 2006; Mehlum et al., 2014).

Follow up contact and/or active outreach to psychiatric patients after suicide attempt or a suicidal crisis has been found to reduce suicides (Doupnik et al., 2020; Riblet et al., 2017; While et al., 2012). Follow-ups include scheduled reappointments, phone contact, and/or active involvement of family members (Mann et al., 2021).

Safety planning aims to reduce suicidal behaviour by strategies and identifying coping skills, and is associated with reduced suicidal behaviour and increased treatment engagement among suicidal patients following discharge (Stanley & Brown, 2012; Stanley et al., 2018).

Media. Both the quantity and the quality of media reporting may trigger additional suicides (Domaradzki, 2021). Evidence of these media influences has resulted in guidelines for the reporting and portrayal of suicidal behaviour (Pirkis et al., 2006) and has changed the reporting of suicides in newspapers (Skehan et al., 2006) and might helped to lower suicide rates (Etzersdorfer & Sonneck, 1998; Niederkrotenthaler & Sonneck, 2007). A recent review found
that media reporting of suicides under certain circumstances also can play an educative and preventive role (Domaradzki, 2021).

Evaluations of education programs for youths have shown to prevent suicide attempts and less suicidal behaviour (Aseltine et al., 2007; Wasserman et al., 2015). Internet-based interventions to prevent suicide behaviour has shown promising results, but more studies are needed (Mann et al., 2021).

Many psychiatric disorders are chronic and recurrent, and some suicide attempt survivors make further suicide attempts. Thus, continuation and maintenance of care for these patients has the potential for suicide prevention and the availability of mental care services have shown to reduce suicidal behaviour (Kapur et al., 2016; Pan et al., 2013; While et al., 2012). For suicide reducing actions to be effective, interventions must be taken at population, subpopulations, and individual levels, and coordination and collaboration among sectors of society are required (World Health Organization, 2021).

2.2. Patient safety

“The physician must be able to tell the antecedents, know the present, and foretell the future – must mediate these things, and have two special objects in view with regard to disease, namely, to do good or to do no harm”

Hippocrates

“Doctors should neither overestimate their capacity to heal, nor underestimate their capacity to cause harm”

Robert H. Shmerling

Patient safety is the foundation of good healthcare, and is by Charles Vincent defined as:

“The avoidance, prevention and amelioration of adverse outcomes or injuries stemming from the process of healthcare” (Vincent, 2006)
The WHO defines patient safety similarly; as a healthcare discipline that aims “to prevent and reduce risks, errors and harm that occur to patients during provision of health care” (World Health Organization, 2022).

Healthcare has undoubtedly contributed to human health, wellbeing and longevity. However, healthcare has always been, and continues to be, a risk-laden section. Modern therapies, diagnostics, and interventions are highly complex, and the patients these are administered to are increasingly sick and frail. Globally, every year, millions of patients suffer patient harm; injuries or death because of poor-quality or unsafe healthcare (World Health Organization, 2022), making patient harm likely to be one of the ten leading causes of death and disability (Jha et al., 2013). The harm can be caused of a range of different adverse events, and a large proportion is considered to be preventable (de Vries et al., 2008; Sauro et al., 2021).

2.2.1. A glance at the evolution of patient safety

Before the patient safety revolution in the last decades, apart from a few pioneers, medical professions did not appear to recognize the extent and seriousness of patient harm. Adverse events used to be considered the unfortunate but inevitable price to be paid for medical advances, and patient incidents were seen as unavoidable complications caused by the patient’s condition and comorbidities, and thought to be isolated to rare cases (Vincent, 1989). Medical errors were seldom acknowledged to harmed patients, and almost never mentioned in medical records.

The recent wider progress of patient safety was driven by several movements; the broader attention to improve healthcare quality, reflections of the nature of errors and adverse events, lessons from high risk industries, and learning from psychology and human factors, along with pressure from patients, society, and governments (Vincent, 2014).

Learning from error

The assumption of high safety in healthcare started to be questioned in the 1980s and 1990s as patient harm was investigated in a more structured and scientific manner. The paper “The critical attitude in medicine: the need for a new ethics”, published by Neil McIntyre, Professor of medicine, and the
Philosopher Karl Popper in 1983, called for actively seeking of errors in medicine and using them to advance personal and general medical knowledge (McIntyre & Popper, 1983). Advances often come by the recognition of error, the overthrow of old knowledge and mistaken theories, they argued. In this view errors become valuable, as clues to progress, and mistakes should be something for clinicians to learn from, not hidden.

McIntyre and Popper highlighted the danger with authorities, here referring to the most experienced and respected professionals (McIntyre & Popper, 1983). Even though we know that everyone is fallible, an authority is not expected to err. If he/she does, the errors tend to be covered to uphold the authority idea. Such culture leads us to hide our mistakes, with consequences maybe worse than those of the first mistake. Instead, they argued, the better scientist, the more aware he will be of his/her limitations. The principle must be to actively search for errors, in order to correct them as quickly as possible, and to learn from them to avoid them in the future. They also suggested that the errors should be investigated, with the goal to be educational and practical, linked to improvement of all doctors and not to punishment.

A decade later, in 1994, Lucian Leape published a paper that addressed the question of error in medicine from some new perspectives (Leape, 1994). He stated that the solutions of medical errors did not primarily lie within medicine, but in the disciplines of human factors and psychology. Many errors, he argued, are beyond the individual’s conscious control and precipitated by a wide range of system factors, and to reduce errors, efforts should be taken in changing the conditions of work rather than on more training for professionals.

The ‘To Err is Human’-effect

“To Err is Human: Building a Safer Health System’, published in 2000 (Kohn, 2000). In the executive summary of the report, the goal was stated to “break this cycle of inactions”, referring to actions regarding errors in medicine causing incidents of patient
harm. A large number of studies of harm and errors was reviewed in the report; causes of harm, the nature of safe and unsafe systems, and the role of regulation and leadership. This report is considered to be one of the most important spur to the development of patient safety, also into public and political awareness (Vincent, 2014). Similar reports were published in Europe (Department of Health, 2000) and Australia (Wilson et al., 1995). Following the publication of the report, the last decades have seen the awareness of medical errors as cause of morbidity and mortality and the knowledge of patient safety increasing (Mitchell et al., 2016; Stelfox et al., 2006).

These reports revealed that as many as one in ten hospitalised patients were harmed unnecessarily, and that a substantial proportion of patients died as a direct result of unfortunate medical care. Unsafe care and resulting patient harm were described not just as results of human fallibility, but principally the result of system failures in the way healthcare was organised and coordinated. The reports also stated that much of the patient harm was preventable, through improvement efforts targeted at the level of clinical practice, organisations and systems.

The report of Kohn’s presented a comprehensive strategy towards a safer healthcare system, only a few main points of relevance are highlighted here. Like McIntyre and Popper (McIntyre & Popper, 1983), the report pointed out the creation of an environment that encourages organizations to identify errors, evaluate causes, and take appropriate actions to improve future performance, as critical components in the strategy to improve patient safety (Kohn, 2000). The recommendations also included establishing a nationwide mandatory reporting system of serious adverse events, and development of voluntary reporting of adverse events.

In these days around 2000, there were few established approaches of analyzing and investigation of incidents in healthcare. In other high-risk industries, such as aviation and nuclear industries, safety awareness became widespread already between the 1960s and 1980s, and healthcare adopted these approaches. The methods used by these industries were largely based on component failure models assuming linear chains of cause-and-effect, such as Heinrich’s Domino model (Heinrich, 1931), and the ‘Swiss cheese model’ (Reason, 1990). The Swiss cheese model illustrates an accident trajectory that
passes through successive ‘slices’ of barriers, aiming to show the dynamics of accident causation arising from interactions between latent failures and a variety of local triggering events.

These models came to be the base for the emerging patient safety approaches and reflect the view of safety we nowadays refer to as safety-I (Hollnagel et al., 2015).

### 2.2.2. Patient safety theories

The concepts of safety-I and safety-II concerning patient safety science were introduced by Erik Hollnagel (Hollnagel et al., 2015), even though other researchers have contributed to developing the ideas of safety-I without referring to the label at the time of their work. Below I point out some differences between the concepts of safety-I and safety-II, which in practice, are to be seen as complementary instead of contradictory (Hollnagel et al., 2015).

**Safety**

According to safety-I, a system is safe if as little as possible - preferably nothing - goes wrong (Hollnagel et al., 2015). In other words, a system where there are no adverse events or incidents. The description of patient safety in the Swedish Patient Safety Act (SFS 2010:659) (The Swedish Patient Safety Act (SFS 2010:659), 2010) is an example of this perspective, where patient safety is defined as protection against patient harm. The purpose of management and investigations in accordance with a safety-I perspective are therefore to ensure that as little as possible goes wrong.

According to safety-II, a system is safe if as much as possible goes well, if the system’s performance is resilient in the sense that it can work in the way it is intended to work in differing and variable conditions (Hollnagel et al., 2015). The purpose of safety-related activities is therefore to ensure that as much as possible goes well. A basic insight in safety-II is that in every day-to-day work, adjustments are always necessary in relation to the prevailing conditions (Braithwaite et al., 2015). Situations differ from time to time, the preconditions of today are not exactly the same as they were yesterday. There can be no precise detailed descriptions of how all work should be done at all
times, the work has to be adopted to the specific situation, an ability of the system referred to as resilience (Hollnagel & Braithwaite, 2013). Resilience has been theorized in different ways, but in this thesis, resilient healthcare refers to the ability of a healthcare system to remain intact and functional under both expected and unexpected conditions; disruptions, challenges, and failures (Fairbanks et al., 2014; Hollnagel & Braithwaite, 2013; Wiig & Fahlbruch, 2019). An example is the expectation that an emergency room will be able to take care of all patients there in a good way, whether it is a quiet Tuesday morning or a busy Saturday night, or whether it is a period of covid-19 pandemic, or not. In order for a system to be resilient, it must have the ability to respond to what is happening, to be able to monitor what is happening, to be able to predict what may happen, and to be able to learn from everything that is happening (Fairbanks et al., 2014).

The goals of safety-I and safety-II are in a sense the same; to make the healthcare safe. However, the perspectives approach the challenges of safety from different directions. One does not exclude the other, both perspectives are needed. In a safety-I perspective, one seeks to achieve safety by eliminating what can go wrong. In a safety-II perspective, one wants to achieve safety by facilitating daily work, by enhancing resilient performance and thus ensuring that as much as possible goes well (Hollnagel et al., 2015).

**Causality**

In safety-I, accidents are seen as the outcome of malfunctions and failures, a linear cause-effect relationship. In a safety-II perspective, accidents are understood as arising from combinations of variables and variability in performance, not always possible to predict. Backwards causality, going from effect to cause, is thus seen as problematic and in many cases logically invalid (Hollnagel et al., 2015).

**The individuals**

The perspectives also consider the role that the individuals play in the system in different ways. In safety-I individuals are seen as components that can make mistakes, while in safety-II individuals are seen as resources that can make meaningful adjustments in daily work to keep the care safe (Hollnagel et al., 2015).
Learning

Both the concepts emphasize the importance of learning, but from different lenses. In the perspective of safety-I, development towards better safety is achieved by learning from what goes wrong, or can go wrong, and measures are taken to reduce the risk that it can go wrong (Hollnagel et al., 2015). It is thus a restrictive and reactive approach that promotes a bimodal view of work and activities, according to which acceptable and adverse outcomes are due to different modes of functioning. As a consequence of the focus on what goes wrong, analysis and learning emerge from situations where, by definition, there was a lack of safety. The general solution generated by this safety-I perspective, is known as ‘find and fix’: Look for failures and malfunctions, identify their causes and then eliminate those or introduce barriers (Hollnagel, 2018).

In the safety-II perspective, learning for increased safety is based on learning from everything that happens - what sometimes goes wrong, but much more often goes well (Hollnagel et al., 2015). Learning should be based on frequency rather than severity, focused on understanding the adjustments that are always made in everyday work, so that one can strengthen the conditions required for the adaptations to be as good as possible. Safety-II can thus be said to be a productive and proactive approach. Seen from a safety-II perspective, a safety-I focus risks leading to a limitation of the possibilities to make the necessary adjustments.

To sum up…

The concepts of safety-I and safety-II present different and complementary perspectives on patient safety. Safety-II is based on a system approach, essential in the understanding of risk in complex organizations such as healthcare, and supplement the linear causal model of safety-I (Aven, 2022).

There is increasing awareness of the complexity of healthcare organizations, exposed to variability in the operation environment, e.g., patient flow, and comprising multiple interacting components of teams, professionals, managerial structures, physical infrastructure, organizational units, and pressure to deliver safe healthcare, forcing the system to be adaptive in response to constantly changing demands and conditions (Woods et al., 2017). The outcomes emerge from the interplay between these aspects and variables
of the healthcare system, often non-linear and to some extents unpredictable (Braithwaite et al., 2017; Braithwaite et al., 2009).

The safety-I perspective has been prevailing during the development of the work on patient safety, almost all of the methods, tools and measurements of patient safety used are based on this perspective. In order to progress in patient safety, work is required to develop and put to use the new theories and models of thinking (Anderson et al., 2020).

2.2.3. Adverse events and patient harm

Patient harm (an adverse event in healthcare that could have been avoided) is the 14th leading cause of the global disease burden, and approximately 15% of total hospital activity and expenditure is a direct result of adverse events (any unintended injury or complication in healthcare, some preventable) (Jha et al., 2013; Slawomirski et al., 2017).

Adverse events can occur at any point of the patient’s care, but traditionally, research has centred on somatic care in hospitals. Comprehensive reviews across countries have found similar overall incidences of adverse events in patients admitted to hospitals of approximately 10%, of which 44-53% being considered as preventable (de Vries et al., 2008; Sauro et al., 2021; Schwendimann et al., 2018). The most common adverse events in the studies above related to nosocomial infections, surgery, and medication. Around 40% of the events resulted in moderate or significant harm (Sauro et al., 2021) and around 7% were fatal (de Vries et al., 2008; Schwendimann et al., 2018).

Patient harm in mental healthcare has not been studied to same extent as in somatic care in hospitals, and there are gaps in knowledge (Brickell, 2009; Quinlivan et al., 2020). This has been suggested to be due to differences in the nature and type of patient harm and the complexity or specific safety needs in mental health services (Berzins et al., 2018; Brickell & McLean, 2011; Dewa et al., 2018; Thibaut et al., 2019). Suicide is the adverse event most common associated with death in mental healthcare (National Patient Safety Agency, 2006).

The definition of a preventable harm (patient harm) varies between studies. A systematic literature review found the main themes of preventable harm to be:
presence of an identifiable modifiable cause, reasonable adaptation to a process would prevent future recurrence, and lack of adherence to guidelines implied preventability (Nabhan et al., 2012). However, the preventability is constantly changing as medical knowledge and patient safety science evolve (Vincent & Amalberti, 2015). For example, the incidence of some types of healthcare-associated infections, previously considered unpreventable, has been reduced and even eradicated (Berenholtz et al., 2011; Pronovost et al., 2006).

A systematic review and meta-analysis across hospitals and primary care that pooled data from 70 studies found the prevalence of preventable patient harm to be 6% across medical settings, which was half of the pooled prevalence of overall harm, that was 12% (Panagioti et al., 2019). Of the preventable patient harm, 12% were considered as severe; causing prolonged, permanent disability, or death. The most common types of preventable patient harm related to medication, other therapeutic management, and invasive surgical and medical procedures. These findings were similar to a previous systematic literature review of preventable patient harm (Nabhan et al., 2012).

A Swedish national retrospective record review of hospital admissions found a prevalence of adverse events of 12%, nosocomial infections were the most common (Nilsson et al., 2018). More than half, 61%, were considered as preventable. The most common preventable patient harm were pressure ulcer and urinary bladder retention.

Along with the growing amount of chronic disorders and an older population, the primary setting is now the most common place for patients receiving healthcare, but still limited evidence is available on the nature, frequency, and cause of patient harm in primary healthcare settings (Auraaen et al., 2018). A systematic literature review of studies in primary healthcare suggested a median of 2-3 incidents per 100 consultations/reviewed records, and 4% were associated with severe harm (Panesar et al., 2016). Most reported incidents of patient harm were related to diagnostics and prescribing errors.

During the last decade, there has been a cultural shift in understanding patient safety incidents from one that focuses on accountability at the human level (identifying who did wrong) to the organizational responsibility at the
systems level (identifying what and why it happened, and how the system can prevent it from happening again) (Woods et al., 2017).

Why does patient incidents occur?

“We cannot change the human condition, but we can change the conditions under which humans work”

James Reason (Reason, 2000)

Although a particular action or omission by an individual might be seen as the immediate cause of an incident, a broader analysis of the systems usually reveals a series of events and departures from safe practice that are caused by environmental/organizational factors (Vincent et al., 1998). Incidents of patient harm usually involve complex interactions of multiple variables, including human behaviour, organizational, technical, and sociocultural factors (Kohn, 2000). The type of harm varies between settings, but similar causative factors can be attributed to most types. Understanding these factors is a critical first step in developing strategies to mitigate and prevent patient harm.

The ETTO principle

The adaption of actions to current circumstances is by Hollnagel described as the efficiency-thoroughness trade-off (ETTO) principle (Hollnagel, 2009). The ETTO principle refer to that people (and organizations) usually must make a trade-off between the resources (primarily time and effort) they spend to prepare and monitor an activity, and the resources (again primarily time and effort) they spend on performing it. In cases when safety and quality are the dominant concerns, the trade-off may favour thoroughness over efficiency. Conversely, if throughput and output are the dominant concerns, the trade-off may favour efficiency over thoroughness.

A basic assumption of the ETTO principle is that it is impossible to maximize efficiency and thoroughness at the same time. On the other hand, an activity cannot expect to succeed, if there is not a minimum of either (Hollnagel, 2009).
Organizational perspective and latent failures

Human behaviour and error cannot be understood in isolation, but in relation to the current context of working environment (Woods et al., 2017). From this perspective, errors are seen as consequences of more general problems in the working environment more than as the result of personal fallibility (Vincent et al., 1998). Reason introduced the concept of latent failures, which relate to the design of the system, organization, or the workplace environment, e.g., including heavy workloads, insufficient supervision, inadequate staff knowledge or experience, and rapid organizational changes, impacting on staff performance (Reason, 1990). Compared to active failures, unsafe acts made by professionals at the sharp end working directly with the patient and usually with immediate consequences, latent failures stem from decisions taken by management, senior clinicians, persons writing guidelines, or designers. It might not be easy to foresee the long-term effect of decisions of management or design, which also are taken in the face of several different competing demands. Failures will continue to occur, the best way to meet them is probably to address latent conditions in the working environment (Reason, 2000).

During the last decade, focus in patient safety has shifted from an individual to a more systemic view. It has become a more general awareness that patient safety in the sharp end, at the front-line, reflects decisions and management at the blunt end, the top of the healthcare organizations; the system performs the preconditions for a safe daily patient work (Dekker, 2011; Rasmussen, 1997; Woods et al., 2017).

Organizational levels: micro-meso-macro. The organizational system can be described by hierarchy levels of micro-meso-macro (Nelson et al., 2007), illustrating that adverse events may be the result of inadequacies in one or several of these organizational levels in the healthcare system, or the interplay between them. Microsystems are here defined as the basic building blocks of all healthcare systems formed around the patient and family, such as the inpatient or outpatient care unit. The mesosystem encompasses interactions between different microsystem units, such as cooperation between units, departments or healthcare providers. The macrosystem involves the whole system of healthcare, such as legislation, political prioritizations, and national policies on healthcare.
2.2.4. How can we make healthcare safe?

Leape emphasized that safer practice can only come from acknowledging the potential for error, and building in error reduction strategies at every stage of clinical practice (Leape, 1994). The safety and effectiveness of many current medical treatments result from the earlier reduction or elimination of complications of adverse events; mortality in the early years of heart surgery, problems associated with the initial attempts at organ transplantation, side effects of many drugs, and so forth. Safety can be achieved partly by attempting to reduce errors but also by actively managing the problems and deviations that inevitably occur (Reason, 2000). Once we accept that errors and failures occur frequently in any system, the need to develop methods of monitoring, adapting, responding, and recovering from failure become obvious (Vincent & Amalberti, 2016).

Following this, awareness of the contributory factors influencing safety in medical clinical practices is one step to safer care. A framework of such contributory factors has been presented by Vincent et al. (Vincent et al., 1998) and includes:

- Patient factors (e.g., complexity and seriousness of condition, language, communication, personality, and social factors)
- Individual (staff) factors (e.g., competence, experience, and health)
- Team factors (e.g., communication, supervision, and seeking help)
- Work environment factors (e.g., staffing levels, skill mix, workload, physical environment, administrative, and managerial support)
- Task and technology (e.g., task design, clarity of structure, availability, use of protocols and decision making aids)
- Organizational and management factors (e.g., financial resources and constraints, structure, policies, safety culture, and priorities)
- Institutional context factors (e.g., economic and regulatory context, and links with external organizations)
Even though several years have passed since the presentation of the framework, the factors remain relevant. The factors are interconnected and the clinical outcome is the result of the interplay between them.

The most direct influence on practice and outcome is usually the patient’s physical and mental condition. Other patient factors, such as the personality, psychological problems, and language may influence communication with staff and, in turn, the likelihood of an adverse event. Each staff member is part of a team, both within their own unit and in the wider organization of the hospital or community unit. The way the individuals practice, and their impact on the patient, are constrained and influenced by own experiences and skills, but also the interplay with the team members and the way they communicate with, support, and supervise each other. In turn, the team is affected by management actions and by decisions made at a higher level in the organization (meso level). The team’s environment is partly controlled by senior clinicians and managers, although constrained by a variety of circumstances. The work environment includes factors such as staffing levels and structures, availability and maintenance of equipment, training and education. The organization, in turn, is affected by the external environment, including external regulatory stakeholders, the broader economic and political climate, and financial constraints (Vincent, 2014; Vincent et al., 1998).

The framework can provide a conceptual basis for a systematic approach to the analysis of incidents in healthcare, including both clinical factors and organizational factors that contributed to the final outcome (Vincent, 2014; Vincent et al., 1998). However, the most important and most difficult problem is to assess the influence of these factors on the patient outcome in the specific case.

A culture of safety

*Culture* is here defined as the collective values, attitudes, beliefs, and principles, the unwritten rules of an organisation. In the healthcare context, culture in practice melts down to ‘how we do things around here’, and is thereby crucial for any outcome (Davies et al., 2000; Vincent, 2014). ‘Here’ can reflect the entire organization, but also a part of the organization, one unit or a group of specific professionals.
Safety culture is one aspect of the wider culture of the organization, and is founded on the attitudes and values of safety of everyone in the organization. Some of the most important aspects in safety culture have been pointed out to relate to openness, blame, reporting, and learning (Leape, 2009; Vincent, 2014).

Reason used the term just culture, where staff is not punished for making errors, but emphasized that deliberate violations and misconduct are not tolerated (Reason, 2004). This is in line with the description by Vincent of an open and fair culture (Vincent, 2014) aiming to preserve personal responsibility and accountability, and thoughtful and supportive organizational responses when incidents occur. Further, a reporting culture is where the environment is safe for people to talk about errors and risks, and report with the aims to adjust, reflect, and learn (Reason, 2004). Finally, in a learning culture, everyone is curious about why errors occur, investigate, find system failures, and fix them.

Culture is formed and adjusted over time. Culture in healthcare is complex because of several different professional groups working in different medical settings, performing different types of healthcare. To achieve a healthy safety culture, Leape emphasized the need of strong leadership with leaders committed to patient safety, and healthcare professionals working together in multidisciplinary teams in mutual respect with clear focus and purpose (Leape, 2009).

2.2.5. Investigation of patient harm

Systematic reporting and investigation of incidents in healthcare to identify risks and to improve patient safety have become widespread safety-improvement strategies (Anderson et al., 2013; Leape, 2002; National Institute for Health and Welfare, 2009). The strategies have expanded our understanding of vulnerabilities in healthcare systems and how patient harm can be prevented (Bates & Singh, 2018). However, the excessive reliance on incident investigation alone has been questioned and is under reassessment (Macrae, 2016; Mitchell et al., 2016; Peerally et al., 2017; Shojania, 2021; Shojania & Thomas, 2013; Trbovich & Shojania, 2017).
The paradigm predominant across incident analyses in healthcare is the linear, cause-and-effect approach with a focus on deviations and non-adherence, in accordance with the safety-I perspective described above (Hollnagel et al., 2015). The approach can lead to important learnings in the system, however most effective where activities are well understood, relatively stable and have limited external influences (Braithwaite et al., 2015; Vincent & Amalberti, 2016).

Investigations based on root cause analysis (RCA) are probably the most wide-spread tools in healthcare services efforts to understand and prevent adverse events (Hagley et al., 2019). The principle of RCA is to identify and rectify underlying system vulnerabilities that allow human errors to cause harm to patients (Reason, 2000). Simplified, this is made by a multidisciplinary analysis team asking what happened (outcome and chronology), why did it happen (contributory factors), and how to prevent it from happening again (actions targeting the contributory factors)? The approach assumes, in accordance with safety-I, that adverse outcomes can be explained by linear cause-effect chains and have causes that can be found and fixed, and that the actions preceding adverse events differ from those that precede ordinary, successful care (Braithwaite et al., 2015).

The expectation of finding a single or limited number of ‘root causes’ seems a gross oversimplification as there usually is a wide variety of contributing factors leading up to the final event (Neal et al., 2004; Vincent, 2003). The outcomes of the RCA have been shown to primarily, in practice, illustrate an organizational micro-level understanding of how risks and incidents emerge, with focus in the incident’s immediate spatial proximity instead of the whole system, and single analyses usually provide little learning beyond the involved staff and unit (Wrigstad, 2018; Wrigstad et al., 2014). Further, most efforts in the investigations are used for identification of shortcomings, instead of finding improvements making the care safer (Kellogg et al., 2017).

A number of methods for accident investigation have been developed, several of these adopted to healthcare (Sklet, 2004). Deeper descriptions of these are beyond the scope of this thesis, only some of the most well-known are briefly mentioned here. Examples of methods based on the safety-I paradigm beside RCA are fault tree analysis (a graphic method for determining causes of an
(Rausand & Hoyland, 2003) and event tree analysis (also a graphic method, that can be used either proactive to identify possible event sequences, or for identification of sequences after an event) (Villemeur, 1992). Failure modes and effects analysis (FMEA) is prospective and analyses potential failures of systems, components, or functions and their effects (DeRosier et al., 2002). However, the prospective analysis is based on past experiences of those involved. A method for analysis based on the safety-II perspective is FRAM (Functional Resonance Analysis Method) (Hollnagel, 2017).

Despite lack of rigorous evaluations of the value of incident investigation methods and known shortcomings, the methods reveal vulnerabilities in healthcare and point out factors that need to be addressed to make the healthcare safer (Vincent, 2014), implying that healthcare organisations need systematic frameworks to learn from incidents (Kohn, 2000; Leistikow et al., 2017; Vincent & Amalberti, 2016). However, the best method to investigate is still unclear, each tool has trade-offs (Hagley et al., 2019). Instead, the appropriate investigative framework to improve the reliability, safety, and quality of care probably depend on the context of the healthcare organisation and the type of incident.

Involvement of patient and family in the investigation

Patient involvement in the measurement and reporting of safety issues has been suggested to be one key to enhance safety (Auraaen et al., 2018), and there is growing recognition among healthcare providers of the value to involve the patient and/or family in the investigation process (Care Quality Commission, 2016; Kok et al., 2018; Zimmerman & Amori, 2007). Involvement of patients in incident analysis could demonstrate the organization’s transparency regarding errors and its responsiveness to patients who have been affected by patient harm, and facilitate to re-establish trust and forgiveness (Zimmerman & Amori, 2007). For the investigations outcome, involvement of patients may reveal information that might be known only by the patient, and thereby influence the selection of actions to prevent the same incident from happening again (Zimmerman & Amori, 2007).

For the patients and families, engaging in the investigation process may be helpful to understand why the incident occurred, dispel any misconceptions about the clinicians’ responses to errors or mistakes, and decrease frustration
and anger (Zimmerman & Amori, 2007). On the other hand, for the involved clinicians, inclusion of the patient and family in the investigation process may be an uncomfortable, emotional experience, that might meet resistance from professionals (de Kam et al., 2020; Fortin et al., 2021), and may also influence the staff dialogue during the analysis.

Still, patient or family involvement in incident investigations is typically organized as a one-time interview event (Kok et al., 2018). Patients or their families are consulted on and provided with information, but they are not actively taking part in the investigation process and their input is often downplayed and not used widely as a driver for broader learning (Care Quality Commission, 2016). There is an ongoing movement regarding patient involvement in the work with patient safety in healthcare organisations, with inspiration from theories and models around co-production and co-design (Batalden et al., 2016).

2.2.6. The Swedish context: supervisory authority and reporting system

Sweden has a history of medical government offices since centuries. In 1937, a specific legislation stating that all adverse events in healthcare that have resulted, or could have resulted, in severe patient harm, are to be reported by the healthcare provider to the supervisory authority for supervision, was put in place. This law was the result of catastrophic mix-up of medication incidents in Maria hospital in Stockholm in 1936 (Ödegård, 2013). The regulation was thereby named *lex Maria*. This reporting model has remained virtually intact, even though the supervision procedure has changed over time along with legislative changes.

*The National Board of Health and Welfare* became the regulatory and supervisory authority of the Swedish healthcare system in 1968. At this time, the supervisory authority made their own investigation of the reported incidents and had the mandate to criticize the provider and responsible staff. The reports were in those times and until 1983 to be send to the police as well, mirroring the regulations focus on human factors to a large extent.
The role of the supervisory authority was changed in 2011, when the Swedish Patient Safety Act (2010:659) was put in place (%The Swedish Patient Safety Act (SFS 2010:659), 2010%). This law pinpoints the responsibility of the healthcare provider organizations for patient safety improvements. The law states that the role of the supervisory authority is to “…ensure that reported adverse events have been investigated to a necessary extent, and that appropriate actions have been taken by the healthcare provider to reach a high level of patient safety”. Hence, the authority reviews the investigation and decides if the healthcare provider has fulfilled their legislated role. If there are shortcomings identified in the investigation, the authority calls for additions or conducts a site visit to inspect the healthcare provider.

In 2013 a new authority, %The Health and Social Care Inspectorate (IVO)%, was formed (prop 2012/13:20) to take over the role of supervision from The National Board of Health and Welfare, both government agencies acting under the Government (Ministry of Health and Social Affairs). The role of supervision of healthcare means that IVO performs independent and free-standing examinations of healthcare to ensure that laws and other relevant regulations in care are followed (Health and Social Care Inspectorate, 2022b). The authority also supervises licensed healthcare professionals and pharmacy professionals, and has the right to propose actions such as withdrawing the right to prescribe narcotic substances if there are deficiencies in professional practice that represent a threat to patients. If the deficiencies of a professional are extensive, serious or recurring, the authority can propose that the person should be delicensed and lose the right to practice their profession. It is the %Medical Responsibility Board (HSAN)% that takes decisions in all authorization matters concerning licensed healthcare professionals.

**The role of the healthcare providers**

As described above, Swedish law states that all incidents that have, or could have, resulted in severe patient harm, are to be investigated and reported by the healthcare provider to the supervisory authority (%The Swedish Patient Safety Act (SFS 2010:659), 2010%). The aims with this mandatory reporting are to take experiences from the incident, learn, and improve safety in healthcare.

The report to the authority must include an internal investigation of the incident conducted by the healthcare provider. The operation managers are
formally responsible for the investigation, but the profession of the investigators can be of any kind of healthcare professions. The content of the internal investigation is regulated by Swedish law, and include a description of the course of the event, causes, and contributing causes to the incident, and improvements that should prevent the same incident from happening again (The Swedish Patient Safety Act (SFS 2010:659), 2010).

The methodology for how the investigation of the incidents should be performed is not regulated. The most widespread method is based on root cause analysis, adjusted to Swedish circumstances and healthcare [Händelseanalys]. This methodological tool and manual for incident investigations was first created in 2005 by key stakeholders in the Swedish healthcare system (The Swedish Association of Local Authorities and Regions (SKR), The National Board of Health and Welfare and the National Patient Insurance Company (LÖF)). The tool has been updated, latest in 2021 (Swedish Association of Local Authorities and Regions, 2021).

It is the chief medical officer (patient safety leader) of the healthcare provider that makes the decision whether an adverse event is to be regarded as a severe patient harm and thereby is to be reported to the supervisory authority, or not. When an incident is to be reported, the chief medical officer makes a formalized notification of the event and sends this together with the internal investigation and associated patient records to the supervisory authority for supervision.

2.3. Patient safety and suicide

Specific empirical studies on patient safety and suicide is sparse (Thibaut et al., 2019), and adopting a patient safety paradigm has been suggested to provide additional insights into suicidal behaviour and generate new opportunities for suicide prevention (Quinlivan et al., 2020).

As a potential patient harm suicide differs from other patient safety incidents in some ways, and the complexity implies challenges. The work with patient safety is traditionally centred on hospitals, and most suicides occur outside the hospitals, in the homes of the patients, with no staff or witnesses around (Rajendran et al., 2022).
2.3.1. Suicide as patient harm

Patient harm typically involve a complex set of contributing and interacting factors including human behaviour, sociocultural factors, and a range of organizational and procedural weaknesses, rather than a single failure on the part of an individual or a system (Vincent & Amalberti, 2016; Vincent et al., 2000). To the best of my knowledge, there is no accepted definition of suicide as an incident of patient harm. The complexity of suicide behaviour implies challenges considering the definition regarding the preventability. As described in the first part of this chapter, suicide is not the consequence of one single factor, mistake or error, instead the final outcome of several contributing and interacting variables over time, e.g., personality, genetics, cognition, health/disorders and related healthcare, interpersonal relations, and psychosocial context (Hawton & van Heeringen, 2009; Mann & Currier, 2010; Nock et al., 2008; O'Connor & Nock, 2014; Wasserman, 2016). Several of these variables change over time and are possible to modify to reduce the suicide risk.

This consideration of patient harm is further complicated by the fact that the healthcare of patients with suicide behaviour often is carried out over long time, by different healthcare providers, and harm and failures of care of longer courses are often due to an accumulation and combination of problems, errors, and system vulnerabilities over time and across multiple contexts (Barker et al., 2017; Hutchinson et al., 2010).

Literature on patient harm in mental healthcare has suggested patient safety incidents to be the result of interactions between contributing factors of the system (e.g., organization and coordination of healthcare, patient safety culture, human resources, work environment) and the provider (e.g., communication skills, competence, time, stigma), but also of the patient (Brickell, 2009; Brickell & McLean, 2011; Nath & Marcus, 2006).

Patient related factors might be of particular significance in the presence of suicidality, most often presenting in the combination of mental disturbances. Cognitive and mood disturbances, and acute psychiatric symptoms may impair on reporting of symptoms, such as suicide thoughts and assessment of suicide risk, delay help-seeking, or complicate differential diagnosis of disease, and self-care (Druss, 2007; Sternberg, 1986). Mental disorders, side
effects of drugs, and distrust in treatment can impinge on the willingness of the patient to receive healthcare and treatment (Bruffaerts, 2011; Quinlivan et al., 2019). Non-adherence to prescribed medication might also be due to insufficient information or education by the prescriber (Procyshyn et al., 2010).

Patients with higher risk for suicide are likely to have experienced financial difficulties, debt, housing issues, and unemployment, which may also complicate planning and adherence to healthcare (Evans, 2018; Gunasinghe et al., 2018). Stigma of mental illness can lead to reluctance to disclose a psychiatric diagnosis and treatment, which can result in insufficient psychiatric care or impact care for other medical conditions (Brickell & McLean, 2011). Furthermore, difficulties in communication and fear of violence may impede on the providers’ ability to prescribe dosages within guidelines (Krakowski et al., 1993; Young et al., 1999).

There may be a tension between maximising patient safety and maintaining patient autonomy, as maximising safety may require coercive management strategies such as involuntary care, observation, locked wards, seclusion, restraint, and enforced medication, which relinquish patients’ autonomy and might imply risks for other types of patient harm (Nath & Marcus, 2006).

Can healthcare reduce suicides?

Despite the general lack of patient safety research in mental healthcare, there is international literature investigating components of mental healthcare services which may be associated with reductions in suicide. Examples are well-developed community services with 24-hour emergency services and outpatient services in Finland, that have been associated with lower suicide rates in a nationwide study of adult mental healthcare services (Pirkola et al., 2009).

The systematic nationwide efforts to aggregate information on all suicides among persons who have been in contact with mental healthcare and/or addiction services during the year before death in the UK (The National Confidential Inquiry into Suicide and Safety in Mental Health, NCISH) have enabled to show that the implementation of 24-hour crisis teams and removal of ligature points in wards decreased suicide rates among inpatients (While et
al., 2012). Furthermore, a study from that database found that healthcare providers with a system for multidisciplinary reviews after suicide showed decreasing suicide rates (Kapur et al., 2022). The reviews were suggested to be an indicator of a learning culture.

**Management of suicide risk**

The suicide risk is the result of the interactions between multiple different variables (Bryan et al., 2020). As the variables and interactions usually vary over time and contexts, these cause fluctuations in suicidality (Bryan et al., 2016; Klonsky & May, 2015; O'Connor & Kirtley, 2018). Following this complexity, suicide risk assessments, suicide risk instruments, and risk scales are incapable of providing accurate estimations and timely predictions of suicide (Carter et al., 2017; Runeson et al., 2017). Instead, the suicide risk assessment should be seen as a suicide risk reducing intervention and central in the planning of the treatment of suicidal patient (Brodsky et al., 2018).

To reduce suicidality, clinical attention should focus on the factors that may be modifiable to decrease the risk, and treatment should attempt to mitigate or strengthen those factors (Wasserman et al., 2012). The suicide risk associated with psychiatric disorders, such as affective disorders, psychotic disorders, substance use disorders, and personality disorders, can be addressed through treatment (Wasserman et al., 2012). High-risk symptoms such as hopelessness, anxiety, insomnia, agitation and feelings of defeat, entrapment, and pain may also be specific targets for treatment that can reduce the suicide risk (American Psychiatric Association, 2003; Klonsky et al., 2021; O'Connor & Kirtley, 2018; Wasserman et al., 2012).

Protective factors should be enhanced to reduce suicide risk. For example, the patient’s social supporting network can be strengthened by educating and involving family members in treatment, and professionals can engage to increase the patient’s hope and connectedness (Klonsky et al., 2021; O'Connor & Kirtley, 2018). Involvement of significant others in the consultation has shown to contribute with valuable information in the assessment and in the planning of treatment strategies, e.g., prior suicide attempts and problems not mentioned by the patient (Magne-Ingvar & Öjehagen, 1999).
Appropriate treatment of mental illness includes establishing and maintaining a therapeutic alliance, monitoring the patient’s progress, adherence and response to the treatment plan, repeated assessments of the patient’s safety, psychiatric status, and level of functioning, and providing education to the patient and, when possible, family members or significant others (American Psychiatric Association, 2003; Wasserman et al., 2012).

Further, attention needs to be paid to patient safety (e.g., continuous observation of the patient, removing potentially hazardous items, moving the patient to a higher level of care), and associated psychological or social problems and stressors (American Psychiatric Association, 2003; The Swedish Psychiatric Association, 2013; Wasserman et al., 2012).

**Ethical dilemmas in the care of suicidal patients**

The acutely suicidal patient may be very vulnerable, and in that state may not be capable of making decisions about his/her own wellbeing, which can pose difficult ethical dilemmas for clinicians. The suicidal person might oppose or not want the help offered, and there is a debate as to whether involuntary admissions are ethical (Borecky et al., 2019). Loss of freedom may deepen regression, and a previously established therapeutic alliance in an on-going treatment can be endangered (Wasserman et al., 2012).

These issues have to be taken into the clinical considerations of the suicidal patients. Even if only a small minority of the persons admitted to hospital because of suicidality die by suicide, a few studies have suggested the term nosocomial inpatient suicides, occurring among already vulnerable patients where the suicide is assessed to be caused by negative factors associated with the inpatient admission (e.g., stigma, trauma, loss of social role) (Large et al., 2014; Large et al., 2017).

The bioethical principles may serve as guides, involving beneficence (to do or promote good, or prevent or remove harm), autonomy (right of self-determination) and non-maleficence (minimizing or preventing harm) (Beauchamp & Childress, 2001), without compromising the responsibility towards suicidal patients (Khan & Mian, 2010).
Second victim at suicide, ‘suicide survivor’

Whilst the term suicide survivor traditionally has been limited to family and friends bereaved by suicide, healthcare professionals have been recognized as legitimate survivors (Grad & Michel, 2004). A literature review of qualitative studies of how doctors and nurses experience patient suicides demonstrated that healthcare professionals share the shame and self-blame seen in families post-suicide, illustrating ‘second victimhood,’ clinicians traumatized by adverse patient events (Malik et al., 2021).

A study of 247 consultant psychiatrists’ experiences of patient suicides in Scotland showed persistent negative reactions including low mood, sleeping disturbances, irritability, preoccupations with the suicide, and decreased self-confidence (Alexander et al., 2000). The suicide made several of the psychiatrist to consider taking early retirement. Colleagues and family were good sources of help, and team meetings and incident analysis were also considered helpful to move on. These aspects should be followed up by the employer after a suicide, and be noticed in the interviews in the analysis.

2.3.2. Current approaches to suicide investigation

Despite the development of different methods for investigating incidents in healthcare (Hagley et al., 2019) the linear, cause-and-effect approach of RCA with a focus on deviations and non-adherence, remains the predominant approach to investigating suicide (Gillies et al., 2015). The approach can lead to important learnings in the system, however regarded to be most effective where activities are well understood, relatively stable, and have limited external influences (Braithwaite et al., 2015). This is not the signature of the usual complex settings around a suicidal person, who often suffers from mental illness and social problems (Fortin et al., 2021; Turecki et al., 2019).

The RCA method has contributed with learning of suicidal behaviour in specific situations (Mills et al., 2006; Mills et al., 2021), but has also been criticized to fail in adequate considerations of central aspects of the suicide phenomenon such as patient factors, as the focus is at a systemic level (Vrklevski et al., 2018). The expectation of finding a single or limited number of ‘root causes’ also seems to be a gross oversimplification (Neal et al., 2004; Vincent, 2003).
**Psychological autopsy**

Psychological autopsy is a method used to examine the psychological and contextual circumstances preceding suicides (Hawton et al., 1998; Isometsä, 2001). The method consists of review of official records, personal documents, and interviews with those who knew the deceased, however not standardized (Hawton et al., 1998). The approach offers the opportunity to obtain extended information on various domains linked to suicidal behaviour, but also described as a complex experimental approach associated with numerous methodological issues and inconsistencies in findings and performance (Beskow et al., 1991; Pouliot & De Leo, 2006). Standard protocol for the investigation method and training guidelines for the interviewers are lacking. A review concluded that there is a critical need to perform methodological research on the various aspects entailed by the psychological autopsy technique to get reliable data (Pouliot & De Leo, 2006).

Literature of other methods for investigation of suicide in use is sparse.

### 2.3.3. The Swedish context: reporting of suicides to the supervisory authority

As mentioned in the introduction, between February 1, 2006, and August 31, 2017, there was a special regulation in the incident reporting system in Sweden regarding suicide. This regulation implicated that all suicides that occurred while the person was receiving healthcare or within four weeks after healthcare contact, were to be reported to the supervisory authority for supervision. This was regardless if the suicide was judged to be an avoidable incident (patient harm), or not. The aim with the mandatory reporting was to identify possible system vulnerabilities. This regulation was withdrawn in September 1, 2017 to be in concordance with the Patient Safety Act, stating that only severe patient harms regarded as preventable are to be reported (HSLF-FS 2017:40 and HSLF-FS 2017:41) (Health and Social Care Inspectorate, 2017; National Board of Health and Welfare, 2017). This change was made because the regulation was regarded by the authority not to be in accordance with the Patient Safety Act (The Swedish National Audit Office, 2021).
An evaluation of 153 supervised suicide cases reported in 2006, after the regulation above was put in place, was published by the supervisory authority at time in 2007 (The National Board of Health and Welfare, 2007). The conclusions in the report were:

- System deficiencies have been identified. Routines were missing for: suicide risk assessments, documentation, collaboration, information transfer, continuity, competence, care programs, care plans, and supervision and monitoring in wards.

- The system deficiencies can be remedied by: knowledge development and implementation of routines.

- The system deficiencies can be followed up: internally by the care after each suicide, and externally by the National Board of Health and Welfare through site visits and regular national follow-ups.
3. Rationale

Despite efforts on suicide prevention interventions, the decline in suicide rates has levelled off in many countries during the last decade, suggesting that new interventions are needed in the work with suicide prevention. Learnings from investigations of suicide should contribute to the development of these new interventions.

However, prior studies have shown that post-incident investigations in healthcare usually provide little learning beyond the staff and units involved. Furthermore, the actual value of the incident-reporting systems and the predominant linear approach of incident investigations in healthcare are under reassessment.

To be effective tools for advances in suicide prevention, investigations of suicide must adapt to current knowledge of suicidology and patient safety. Combining research in suicidology with patient safety paradigms would provide new opportunities to develop and put to use new theories and models of thinking, aiming to find interventions to facilitate to close the gap between evidence, policy, and practise in the efforts to reduce the number of suicides.

This thesis aims to be a part of this work.

3.1. Aim and research questions

The overall aim of this thesis was to increase the knowledge and understanding of suicide as an incident of patient harm, and to find possibilities of changes in the approach to suicide investigations which could contribute to increased learning and improve suicide prevention in healthcare.

The work was guided by two research questions:

1. What can we learn about suicide as an incident of patient harm from the current approaches to investigations of suicide?

2. What changes in the healthcare’s investigations of suicide could advance learning and improvement in the care of suicidal patients?
To reach the aim and to answer the research questions, four studies were performed. Specific aims of these studies were:

I. To aggregate the conclusions of the investigations of the healthcare provided prior to suicide in a Swedish context.

II. To explore how mandatory reporting of suicides in Sweden influenced the outcomes of the investigations of the healthcare provided prior to suicide and what learning and possible improvement followed.

III. To explore the problems with the current approaches to investigations of suicides, and to propose and discuss ways to move forward.

IV. To explore the relevance of our framework for investigations and to provide a deeper understanding of what persons with lived experience and professionals consider to be most important to analyse in the investigations of healthcare before suicide to learn and improve the care of suicidal patients, and how this can be done.
4. Material and methods

4.1. Epistemological research perspective

“Any problem of scientific inquiry that does not grow out of actual (or ‘practical’) social conditions is factitious; it is arbitrarily set by the inquirer”

James Dewey (Dewey, 1938)

The starting point for the epistemological research perspective in this thesis was pragmatism, and underlying theoretical foundations of social constructionism, where knowledge is the situated and temporary outcome of dynamic interpretations of several possible versions of reality (Berger, 1967; Haraway, 1988).

Pragmatism as a research paradigm finds its philosophical foundation in the historical contributions of the philosophy of pragmatism and embraces plurality of methods (Maxcy, 2003). As a research paradigm, pragmatism is based on the proposition that researchers should use the philosophical and/or methodological approach that works best for the particular research problem that is being investigated (Kaushik & Walsh, 2019). It is often associated with mixed-methods or multiple-methods where the focus is on the consequences of research and on the research questions rather than on the methods (Maxcy, 2003; Morgan, 2007).

A major underpinning of pragmatist philosophy is that knowledge and reality are based on beliefs and habits that are socially constructed (Kaushik & Walsh, 2019). Pragmatists generally agree that all knowledge in this world is socially constructed, but some versions of those social constructions match individuals’ experiences more than others (Morgan, 2007). Pragmatists doubt that reality can ever be determined once and for all (Pansiri, 2005). They view reality as a normative concept and maintain that reality is what works, and that reality is true as far as it helps us to get into satisfactory relations with other parts of our experiences.
Another major underpinning of pragmatist epistemology is that knowledge is always based on experience, and one’s perceptions of the world are influenced by our social experiences (Morgan, 2007). Each person’s knowledge is unique as it is created by her unique experiences. Nevertheless, much of this knowledge is socially shared as it is created from socially shared experiences.

The essence of a pragmatist ontology is actions and change; humans acting in a world which is in a constant state of becoming (Dewey, 1931). Action is the way to change existence, and to perform changes in desired ways, action must be guided by purpose and knowledge. The world is thus changed through reason and action, forming an inseparable link between human knowing and human action. One of the foundational ideas in pragmatism is that the meaning of an idea or a concept is the practical consequences of the idea/concept (Goldkuhl, 2012).

Pragmatists emphasize that learning is an on-going process of problem-solving, deliberation, and experimentation, over time along with experience, identity, habit, skill, and knowledge (Ansell & Geyer, 2017). Pragmatism has an interest not only for what is, but also for what might be; an orientation towards a prospective, not yet realised world (Goldkuhl, 2012). Pragmatism is concerned with an instrumental view on knowledge; that it is used in action for making a purposeful difference in practice.

Patient safety and suicidology concern and involve complex issues in complex organisations, and to progress in safety in the care of suicidal patients the use of new knowledge, actions, and interventions are required. To my understanding, the pragmatism paradigm, associated with action, intervention, and constructive knowledge, and described to be suited in the integration of different types of knowledge to address challenging problems, seems to be well suited to serve as guiding philosophical underpinning in this work.
4.2. Methods and material

4.2.1. Study I and II

Study I and II were performed as retrospective reviews of incident reports, investigations, and subsequent decisions of supervisory authority regarding suicide cases reported to the supervisory authority in Sweden. The methodology of these two studies was similar, so the studies are described together.

Cases

In study I, all suicide cases in 2015 reported to the supervisory authority were included (n=436). In study II, three cohorts of suicide cases were chosen: Cohort 1 comprised all suicides reported to the authority from the time the reporting of suicides became mandatory, February 1, 2006, to 2007 (n = 279). Cohort 2 comprised all suicides in 2015 reported to the supervisory authority (the same cases as studied in study I) representing a period when mandatory reporting was well-established among healthcare providers (n = 436). Cohort 3 comprised all reported suicides from September 1, 2017, which was the time the law regarding reporting was changed, to November 30, 2019 (n = 316).

All documents associated with the included suicide cases were obtained from the supervisory authority, requested by mail through their registry service. Every individual suicide case was given a code number. The patient’s demographic data and treatment received in the months preceding his/her death were registered. Major diagnoses were documented and coded in accordance with the International Statistical Classification of Diseases and related Health Problems, 10th revision (i.e. ICD-10).

Categorization of data

A coding scheme was used to categorize the deficiencies and actions reported by the healthcare providers in the investigations. The coding scheme was based on the general categories of the most widespread method for investigating adverse events in Swedish healthcare [Händelseanalys], which is based on RCA (Swedish association of local authorities and regions, 2015). To make the categorization more specific, four of the major categories were
divided into additional subcategories, and a category of “others” was added in case none of the other categories was considered appropriate. Every category was described and exemplified as described in the table below (table 1).

Table 1. Coding scheme for categories of deficiencies and actions in the investigations, with definitions and some examples (Roos af Hjelmsäter et al., 2019)

<table>
<thead>
<tr>
<th>Category and definition</th>
<th>Examples of deficiencies</th>
<th>Examples of actions</th>
</tr>
</thead>
</table>
| **Communication and information**  
*Communication with peers and family* |  
Deficiencies and actions related to cooperation, communication, information, and interaction between the healthcare provider and the families and peers of patients | Shortcomings in adequate information about the healthcare from provider to family/peers  
Absence of or inadequacies in the providers’ contact with family/peers at time for discharge or at permission from hospital | New routines for involving family/peers in the healthcare  
New written information of psychiatric disorders and treatment  
“Courses” or lectures for family/peers about psychiatric disorders and treatment |
| **Documentation** |  
Deficiencies and actions related to administration and documentation | Non-adherence to local documentation policies  
Inadequate, missing, wrong, or delayed documentation in patient record | Patient record reviews for quality improvement  
New guidelines or routines for the documentation process |
<table>
<thead>
<tr>
<th><strong>External communication</strong></th>
<th><strong>Internal communication</strong></th>
<th><strong>Education and competence</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Deficiencies and actions related to cooperation, communication, and collaboration with actors outside the own unit/clinic of the healthcare provider</td>
<td>Absence of or inadequacies in information at discharge from hospital to other care providers involved in the patient’s care</td>
<td>New meeting points for cooperation between different healthcare providers, consulting meetings</td>
</tr>
<tr>
<td><strong>Education and competence</strong></td>
<td><strong>Education and competence, not specified</strong></td>
<td><strong>Case report discussions at staff meetings, lectures</strong></td>
</tr>
<tr>
<td>Deficiencies and actions related to education and competence, excluding these related to suicide risk assessments</td>
<td>Inadequacies in competence or experience of staff</td>
<td>Case report discussions at staff meetings, lectures</td>
</tr>
<tr>
<td></td>
<td>Inadequate supervision or introduction of staff</td>
<td>Reminding staff of existing guidelines</td>
</tr>
<tr>
<td><strong>Education and competence in suicide risk assessment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deficiencies and actions related to education and competence in suicide risk assessment</td>
<td>Inadequate knowledge or experience of staff to make a sufficient suicide risk assessment</td>
<td>Lectures and training in suicide risk assessment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reminding staff about existing policies and guidelines of suicide risk assessment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Technics and equipment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Deficiencies and actions regarding technics and equipment</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Organization and management</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Human resources</strong></td>
</tr>
<tr>
<td>Deficiencies and actions involving staffing, care availability, and psychological working environment</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Number of inpatient beds in hospital</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Deficiencies and actions related to available beds in hospital</td>
</tr>
<tr>
<td>Organization/management</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>Deficiencies and actions related to leadership, organizational structure of healthcare, and physical working environment</td>
</tr>
<tr>
<td>Organizational structures impairing the healthcare</td>
</tr>
<tr>
<td>Lack of liability to the leaders</td>
</tr>
<tr>
<td>Inadequate premises</td>
</tr>
<tr>
<td>Organizational reconstructions Rebuilding of premises</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policies and procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care plan and crisis plan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Deficiencies and actions related to care plan or crisis plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate or lack of care plan/crisis plan</td>
</tr>
<tr>
<td>New routines for making care plan/crisis plan or follow up</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diagnosis</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Deficiencies and actions related to the diagnostic process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed, missed, wrong, or inadequate diagnose</td>
</tr>
<tr>
<td>New guidelines or routines for the diagnostic process</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suicide risk assessment</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Deficiencies and actions related to the process of suicide risk assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-adherence to local policy or guidelines for suicide risk assessment</td>
</tr>
<tr>
<td>Inadequate risk assessment</td>
</tr>
<tr>
<td>New guidelines or routines for suicide risk assessments</td>
</tr>
<tr>
<td>Treatment</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>Deficiencies and actions related to treatment of the patient</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Deficiencies were defined as the causes and contributory causes to the incident identified by the healthcare provider in the investigation. Actions were any interventions that the provider suggested or performed in attempt to prevent new incidents. Therefore, actions taken to prevent the reported suicides (e.g., telephone calls, resuscitations) or actions to inform family or professionals that a suicide had occurred, were not registered as actions in this study. Separate notes were made when a deficiency or action was related to a healthcare-service routine and if patient-related factors were reported to have
contributed to the death. How learning from the investigation was described; inside the department, outside the department, irrelevant, or not mentioned, was registered. In cases where different providers reported the same suicide case, the outcomes of the investigations were grouped. Identical deficiencies or actions reported by different providers regarding the same patient were excluded, thus ensuring that every factor was counted only once.

In an effort to better understand where in the organizational system the identified deficiencies and actions were situated, a classification of the organizational levels of the deficiencies and actions was made. The classification was based on a micro-meso-macro-perspective (Nelson et al., 2007). For each case, only the highest organizational level for each deficiency and action was coded. All data collection and categorization was conducted by me.

Supervisory authority

In study I, the decisions of the supervisory authority were coded as follows: ‘immediate approval’, ‘request for one or more additions’, or ‘inspection’. In study II, the mandate stipulated to the authority by legislation differed between cohort 1 and cohorts 2 and 3, hence the formulation of the decisions also differed. To facilitate comparison among the outcomes, for all cohorts only decisions categorized as ‘immediate approval’ and ‘inspection’ were noted, as these remained unchanged over the period. A note was made if a physician employed by the supervisory authority was involved in the decision-making.

Statistical analyses

In study I, summary statistics were calculated for deficiencies, actions, and decisions of the supervisory authority. Frequencies for each category and organizational hierarchal level in deficiencies and immediate actions were analysed per individual and aggregated. In study II, frequencies for each category, organizational hierarchal level of deficiencies and actions, and decisions of the supervisory authority were analysed per individual and aggregated per cohort.

Chi-square tests of independence were used to compare the number of deficiencies and actions in the same category in study I, and in study II to compare the number of new routines and the absence of routines within the
same cohort, as well as the proportion of the organizational hierarchy of deficiencies and actions between cohorts. As the pre-requisites differed between the cohorts, no further statistical analyses to compare the cohorts were judged to be possible. We considered a two-sided p-value of <0.05 to indicate statistical significance. Fisher’s exact test was used in cases where 20% of the analysed groups had an expected count of less than 5. The statistical analyses were performed using IBM SPSS Statistics 24.

4.2.2. Study III

Study III was performed as a scoping narrative literature review following the methodological framework of scoping reviews described by Arksey and O’Malley (Arksey & O'Malley, 2005). This includes five key stages: identification of the research question, identification of relevant studies, selection of studies, and finally, charting the data, collating, summarizing, and reporting the result.

This review aimed to describe the problems with the current approaches to investigations of adverse events in healthcare applicable to investigations of suicides as incidents of patient harm and to propose and discuss ways to move forward. The research question was two-fold: 1) What problems with the current approaches to investigations of patient harm applicable to investigations of suicides as incidents of patient harm are described in the literature? and 2) What are the evidence to support changes to address the problems?

To enable identification of relevant literature for the study question the search strategy was developed in consultation with a professional university librarian. The literature searches were performed by me in PubMed, PsycINFO, and Cochrane databases in 2021. In PubMed and PsycINFO used terms were ‘suicide’ combined with each of the following: patient safety, analysis, investigation, investigation methodology, patient harm, incident, root cause analysis, psychological autopsy, failure mode and effect analysis, and fault tree analysis. Searches were also performed by using ‘patient safety’ in combination with ‘analysis’ and ‘investigation’. Furthermore, patient harm and investigation were combined. Searches were restricted to the English language and search terms in title/abstract. In Cochrane, reviews were
searched by topics (health & safety at work and methodology) and keywords in title (patient safety, suicide prevention, incident analysis, and investigation). This study did not include structured searches of gray literature.

The selection of studies was made through review of titles and abstracts screened for relevance. Inclusion criteria were studies of investigations of suicide, investigative methods, and methodologies for analyses of incidents of patient harm. Studies not applicable to investigation of suicides were excluded. Examples were studies focusing on specific processes or incidents in areas that were not perceived as applicable to suicide, e.g. radiology and pathology, and studies with a focus on investigation of other specific forms of harm. Chosen studies were read in full text and eligible studies for the study aim were included. Reference lists of included studies were screened for relevant records, and searches for further literature by authors of included studies were performed in Google Scholar. Selected literature was shared within the research team and literature of relevance previously known by the researchers was also considered. A flow diagram of the selection of literature is shown on next page.

To answer the study questions the literature was split into two themes: 1) problems with current approaches to investigations, and 2) support for changes to address the identified problems. In each paper, potentially relevant issues were identified by me in discussion with the co-authors. Some of the selected papers included material relevant to both questions, in which case, we identified specific sections relevant to each theme. Relevant issues were grouped and categorized by me. These categories were reviewed and revised by the research group until a consensus was reached.
Flow diagram for the literature selection (Fröding et al., 2022)

Identification

- Records identified from databases (n = 4095)
  - PubMed (n = 3269)
  - PsycINFO (n = 666)
  - Cochrane (n = 160)
- Additional records identified through other sources (n = 44)
  - Literature previous known by authors (n = 21)
  - Literature lists (n = 15)
  - Author searches (n = 8)

Screening

- Records screened (n = 4139)
- Records excluded after screening titles and abstracts (duplets and beyond scope) (n = 4054)

Included

- Reports assessed for eligibility (n = 85)
- Reports excluded: Beyond scope (n = 43)
- Studies included (n = 42)
  - Database search (n = 20)
  - Literature previous known by authors (n = 16)
  - Literature lists (n = 3)
  - Author searches (n = 3)
4.2.3. Study IV

Based on the findings in study III and the experiences in the research team we created a prototype framework for investigations of suicide, presented in table 2. In study IV, we aimed to explore the relevance of this framework, and to provide a deeper understanding of what persons with lived experience and professionals consider being most important to analyse in the investigations of healthcare before suicide to learn and improve the care of suicidal patients, and how this can be done.

Table 2. Prototype framework for investigation of suicide as patient harm (Requirements for effective investigation and learning after suicide: The views of persons with lived experience and professionals, Fröding et al., in manuscript)

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Informants and information sources</th>
<th>Factors to explore</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The personal life situation</td>
<td>Next-of-kin</td>
<td>Living circumstances, e.g., relationships, living, work, economy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Life events</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Life goals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Health, diseases</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contacts with healthcare</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expectations on healthcare, confidence and participation in care, participation of next-of-kin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Treatments, effects and outcome</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suicidal behaviour</td>
</tr>
<tr>
<td>2. The care process</td>
<td>All current healthcare professionals, and patient record</td>
<td>Contacts with healthcare, inpatient, outpatient, involuntary care</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Diagnoses, evaluation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Treatments, evaluations and follow-up, adherence to guidelines, outcome</td>
</tr>
<tr>
<td>3. Suicidal behaviour</td>
<td>Next-of-kin, healthcare professionals, and patient record</td>
<td>Protection factors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk factors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suicidal communication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suicidal behaviour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Triggers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suicide risk assessments</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suicide preventive actions</td>
</tr>
<tr>
<td>4. Patient safety</td>
<td>Healthcare professionals, next-of-kin, and patient record</td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Patient safety</td>
<td>Suicide attempts, acute suicidality</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suicide</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Availability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continuity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Competence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Care plan and crisis plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change/finish of care contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Missed appointments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cooperation, communication and information, with the patient, healthcare providers, and next-of-kin</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Analysis of the personal patient journey</th>
<th>Merge part 1-4 and analyse the outcome in a multidisciplinary team, if possible together with next-of-kin.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis of the personal patient journey</td>
<td>Identify healthy and stable periods, and variables of significance. Include the perspectives of the patient (e.g., relationships, work, economy, home), healthcare (e.g., contacts, pharmacological therapy, other treatments, care plan), and patient safety (e.g., continuity, availability, cooperation)</td>
</tr>
<tr>
<td></td>
<td>Identify of unhealthy and unstable periods, and variables of significance. Include the perspectives of the patient (e.g., relationships, work, economy, home), healthcare (e.g., contacts, pharmacological therapy, other treatments, care plan), and patient safety (e.g., continuity, availability, cooperation)</td>
</tr>
<tr>
<td></td>
<td>Identify recoveries from illness and acute suicidality/suicide attempts and variables of significance. Include the perspectives of the patient (e.g., relationships, work, economy, home), healthcare (e.g., contacts, pharmacological therapy, other treatments, care plan), and patient safety (e.g., continuity, availability, cooperation)</td>
</tr>
<tr>
<td></td>
<td>Identify and analyse periods of acute suicidality. Try to identify triggers and variables of</td>
</tr>
</tbody>
</table>
significance. Include the perspectives of the patient (e.g., relationships, work, economy, home), healthcare (e.g., contacts, pharmacological therapy, other treatments, care plan), and patient safety (e.g., continuity, availability, cooperation).

Identify gap between the expectations of the patient and the actions and prerequisites of the healthcare

Identify gap between what could have been expected from healthcare and what was done

<table>
<thead>
<tr>
<th>6. Summary and recommendations</th>
<th>The investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highlight good examples</td>
</tr>
<tr>
<td></td>
<td>Identified deficiencies</td>
</tr>
<tr>
<td></td>
<td>Recommendations for improvements</td>
</tr>
<tr>
<td></td>
<td>Plan for implementation of recommendations</td>
</tr>
<tr>
<td></td>
<td>Plan for sharing key findings</td>
</tr>
<tr>
<td></td>
<td>Follow up of results and implementation of improvements</td>
</tr>
</tbody>
</table>

The study was performed by semi-structured interviews. The interview guide was developed iteratively by the research team and structured around the core research questions and reflections on the framework. The interview guide was piloted with one patient safety leader before data collection (not included in the study) and was found feasible. Respondents were persons with own experience of suicidality, persons that had lost someone dear in suicide, and three different groups of professionals (suicide researchers, patient safety leaders, and officials at the National Board of Health and Welfare and Health and Social care Inspectorate). Individual interviews were used and are suited to seek deep information and understanding (Johnson & Rowlands, 2012).

The interviews were transcribed by me and analysed by systematic text condensation (STC) as described by Malterud (Malterud, 2012). The STC-procedure consists of the following steps:
1. Total impression – from chaos to themes: reading the transcriptions to get a general impression of the whole and identifying preliminary themes.

2. Identifying and sorting meaning units – from themes to codes: meaning units (text containing some information of the research question) are sorted and coded into code groups.

3. Condensation – from code to meaning: text from all meaning units within a code group is incorporated into a condensate describing the group.

4. Synthesizing – from condensation to valid descriptions and concepts reflecting the wholeness of the original context. Results are the outcome of the multi-vocal synthesis.

A pragmatic semantic realist approach was used, assuming that what the interviewees said actually reflected their experiences. The potential themes were refined and defined until they were considered to reflect the contours of the coded data, coherence between the persons with own experience and the professionals, and the data set as a whole.

All interviews were performed, transcribed, and analysed in Swedish. The themes, subthemes, meaning units and quotes were translated into English before the discussion in the research team.

4.3. Ethical considerations

The overall aim of this thesis was to increase the understanding of suicide as an incident of patient harm, and to find possibilities of changes in the approach to suicide investigations to advance in learning to improve suicide prevention in healthcare.

Most suicides leave frustration, anger, and sadness behind, among both family and professionals. In some cases, also feelings of guilt and failure. With respect to all involved, learnings from what might went wrong and what was successful in healthcare should be taken and implemented, to be helpful for future patients and healthcare.
In study I and II investigations of healthcare after suicides were reviewed to aggregate conclusions of outcomes. Personal data were handled with careful respect to the integrity of the suicide victims and their relatives during the review of the cases, and careful attention was paid to ensure individuals confidentiality in the paper. The documents needed for the reviews were requested from the supervisory authority. According to the Swedish act The Act concerning the Ethical Review of Research Involving Humans (2003:460) and an advisory opinion from the Regional Ethical Review Board, these studies did not met criteria for ethical review as they did not include any persons alive. The supervisory authority considered that the requested documents were covered by confidentiality, but that the risk of injury or other inconvenience was eliminated by a reservation that stated that the researcher (EF) was given permission to access the documents strictly within the framework of the research at Jönköpings University. I was the only one who took direct part of the documents that contained personal data. Data was stored in line with current regulations and with access only for authorized persons in the research team. The confidentiality of the deceased was maintained and their memory or survivors were judged not to suffer by the examination.

The investigations were the result of thousands of working hours. Aggregation and analysis of the results can be one piece of the puzzle to understand how healthcare can improve in suicide prevention. Not using this existing data should be more unethical than using it to increase the knowledge in efforts to improve the care of suicidal patients.

Study III was a scoping narrative review, with the aim to make a review of the weaknesses of current approaches to investigations of patient harm. More important though, was to find ways forward to make the investigations more useful in the efforts to improve patient safety. No ethical considerations were identified in this study.

In study IV, we involved persons with own experience of suicidality, people who had lost a loved one in suicide, suicide researchers, patient safety leaders, and officials of the supervisory authorities. The interviewer and the respondents had no dependency on each other. The study followed research ethical principles (Foundation & Academies, 2011). The study was approved by the Swedish Ethical Review Board (Dnr 2021-03701). Participation was
optional, and all respondents got oral and written information of the study and their contribution to the study before inclusion with informed consent. The respondents had the possibility to cancel their participation at any time without motivation or consequences. A psychiatrist was available to meet any emerging needs. None of the responders contacted this psychiatrist. Individual data was kept confidential and not disclosed to any unauthorized persons. Recorded material is stored under current regulations. Financial and other compensation for participation in the study were not obtained. Careful attention was made to ensure that materials and information was handled in such a way that individuals cannot be identified at the point where the outcomes of the study are presented. There is a risk for professionals to feel ‘singled out’ when they read the study results. This is a well-defined group, and this risk will be minimised by de-identification of the data in the paper.

Despite efforts to reduce suicide rates in Sweden, the number has been relatively stable since the turn of the century (The National Board of Health and Welfare, 2022). This thesis aims to increase knowledge about suicide as patient harm in efforts to improve the care of suicidal patients. The benefits of the studies are expected to exceed the risks. It is hoped that most indirectly affected victims and involved professionals should be positive about this research and the fact that healthcare providers and university wish to learn from the incident.
5. Results

5.1. Study I

The first study addresses the first specific aim of the thesis; to aggregate the conclusions of investigations of healthcare after suicide cases in Sweden in 2015 that were reported to the supervisory authority. More specifically, this study aimed to compile the deficiencies in healthcare found in these investigations; the actions proposed to deal with the deficiencies; the level of the organizational hierarchy (micro-meso-macro) in which the deficiencies and actions were situated; and the outcomes of the supervisory authority’s decisions.

Cases

The supervisory authority received 473 reports of suicides. In 35 cases, the same individual was reported by two different healthcare providers, and for one case, the same suicide was reported by three different providers, resulting in 436 unique individuals. Demographic description of the cases is provided in the result section of study II.

Deficiencies in healthcare before suicide

Deficiencies in the healthcare that were considered to have contributed to the suicide were identified by the healthcare provider in 55% (n=240) of the reports. Altogether, a total of 952 deficiencies were identified. The number of deficiencies per case ranged from 1 to 21, with a median of 3.

The most frequent deficiencies were in the ‘treatment’ and ‘suicide risk assessment’ categories. Examples of deficiencies in treatment were inadequate or delayed pharmacological treatment, non-adherence to existing guidelines, and inadequacies in doctors’ prescribing of pharmacy. Noticeable was that 80% of the individuals were prescribed psychotropic drugs at the time of death. Hypnotic drugs, antidepressants, and anxiolytics were most commonly prescribed.
Non-adherence to local guidelines for suicide risk assessment and a misleading suicide risk assessment were examples in the category of suicide risk assessment. Deficiencies in ‘external communication’ were the third most frequent. Examples were shortcomings in communication between a somatic and psychiatric clinic and the lack of important information being handed over from one healthcare provider to another.

Deficiencies in routines (in any category) were reported in 20% (n=96) of all cases. These often reflected non-adherence to existing routines. Missing or defective routines were reported in 11% (n=49) of cases.

Patient-related factors were reported to have contributed to the suicide in 31% (n=135) of cases. Examples were changes in the patient’s private relationships or life situation, or circumstances the provider considered to be outside the influence of healthcare.

**Proposed actions to address the deficiencies**

Actions aiming to prevent that the same incident will happen again were taken or proposed in 80% (n=347) of all cases. In all, a total of 1330 actions were described. The number per case ranged from 1 to 20, with a median of 3.

The most frequent actions were in the category of ‘education and competence not specified.’ Examples were case report discussions at staff meetings, lectures about affective disorders, and reminding staff about existing local guidelines. The second most frequently reported actions were categorized in ‘education and competence in suicide risk assessment.’ Examples were lectures for professionals about suicide risk assessment and reminding staff about existing guidelines for suicide risk assessment. Together, actions in either of these two categories were described in 52% (n=227) of all cases, corresponding to 32% of all reported non-immediate actions. The third most frequent actions were changes in ‘work process.’ Examples were new checklists and changes in the internal system for reporting of adverse events.

Changes in routines (in any category) were proposed in 35% (n=152) of all cases.
**Organizational hierarchy**

All reported deficiencies were at the micro level in 65% (n=157) of cases. An example of a deficiency at the micro level was inadequacies in the doctor’s prescription of pharmacy or in the documentation of suicide risk assessment. The remaining 35% (n=83) had at least one deficiency identified at the meso level, such as shortcomings in cooperation between a psychiatric clinic and a somatic clinic or inadequacies in the communication between professionals in hospital and municipality. No deficiencies were considered to be at the macro level.

The organizational levels of the actions were equal to those of the deficiencies; in 65% (n=225) of the cases, all actions were at the micro level and in 35% (n=120) there was at least one action at the meso level. Examples of actions at the micro level were case discussions at staff meetings, lectures, and new checklists. Examples of actions at the meso level were changed procedures for communication or cooperation between different healthcare providers. Only one proposal was at the macro level, and this was a suggestion to enable the prescribing doctor to check what drugs a patient received from pharmacies throughout the country.

**Learning**

Learning from the investigations was described to be inside the department in 56% (n=266) of the reports. In only 4% (n=20) of the reports, sharing of the experiences and conclusions outside the own department was described. In all other reports, nothing was mentioned about the learning or considered not being relevant.

**Decisions of the supervisory authority**

The supervisory authority approved the report from the healthcare provider without further requirements in 65% (n=284) of cases. In 29% (n=126), the supervisory authority called for one or more additions to the investigation before approval. In 6% (n=25), an inspection (site visit) took place at the healthcare provider before the decision, and in these cases the supervisory authority usually called for additional actions before their decision.
5.2. Study II

Study II addresses the second specific aim of the thesis: to explore how mandatory reporting of suicide cases have influenced the outcomes of the investigations of healthcare after suicide and what learning and possible improvement might have followed.

Cases

Three cohorts of suicide cases, each from a different time period, that were reported to the supervisory authority were chosen for analysis:

- **Cohort 1** comprised the cases reported to the supervisory authority in 2006, from the time the reporting of suicides became mandatory, to 2007 (n=279)

- **Cohort 2** comprised all cases in 2015 (n=436). This cohort represented a period when mandatory reporting was well established among healthcare providers

- **Cohort 3** comprised all reported suicides from September 1, 2017, which was the time the law regarding reporting was changed to include only cases regarded as a severe patient harm, to November 30, 2019 (n=316).

Demographic data for the reported cases showed similarities across the cohorts. The majority (67-74%) was reported by psychiatric healthcare providers, and around one fifth by primary care. Around two thirds of the individuals were men and the median age was 42-50 years. Half of the individuals died from suicide within 4 days of their last contact with a healthcare professional and more than 80% were outpatients. Involuntary care was present in 5-6% of the cases. A majority (82-91%) of the persons was diagnosed with a psychiatric disorder; affective disorders most frequent, followed by anxiety disorder, substance abuse, and psychosis, similar distribution in all cohorts. Prior suicide attempts were noticed in 46-49%. Documentation of suicide risk assessment was absent in 49% of the cases in cohort 1, in 25% in cohort 2, and in 38% in cohort 3. Elevated suicide risk was identified in 29-36% of the cases. Hanging was the most frequent used suicide method (used in 37-41% of the cases), followed by intoxication (used in 15-25% of the cases). Around half of the suicides (51-57%) were committed in the person’s home, 5-10% in hospital.
Deficiencies in healthcare

Deficiencies in healthcare were reported in 49% (n=136) in cohort 1, in 55% (n=240) in cohort 2, and in 78% (n=248) in cohort 3. Over time, some changes in the proportions for the categories of deficiencies were observed, but the reported deficiencies remained centered on the final patient contact with healthcare services.

In cohort 1, the most common deficiencies concerned ‘suicide risk assessment’, present in 33% (n=92), followed by deficiencies in documentation that were present in 20% (n=57). In the remaining categories (n=14), the frequency of deficiencies was below 10%. This is to be compared with cohort 2 and 3, in which only five of the categories had a frequency of deficiencies below 10%.

In cohort 2, deficiencies concerned ‘suicide risk assessment’ was the most frequent, present in 20% (n=86). In general, in cohort 1 these deficiencies related to an absence of local guidelines for suicide risk assessment, and in cohorts 2 and 3 to non-adherence to existing guidelines.

In cohort 3, deficiencies in ‘suicide risk assessment’ were found in 24% (n=76), however, deficiencies in ‘treatment’ and ‘external communication’ were the most common, both present in 29% (n=92, n=91). Examples of deficiencies in ‘treatment’ were delayed, or a lack of, follow-up after prescription of medication, or non-adherence to current treatment guidelines. Examples of deficiencies in ‘external information’ were a lack of, or insufficient, information exchange between healthcare providers.

Proposed actions for addressing deficiencies

In a majority of the cases, the providers proposed actions for improving the healthcare services. The proportions of the action categories differed between the cohorts. In cohort 1, actions relating to “suicide risk assessment” were the most common, usually involving the creation of new local guidelines regarding this issue. In cohorts 2 and 3, actions centered on education, present in more than half of the cases. Examples of educational actions were reminding staff about existing local guidelines, holding case-report discussions at staff meetings, and staging lectures regarding suicide risk assessment.
Learning and sharing

Any lessons learned and the sharing of experiences obtained from cases and investigations usually remained within the department in question. Sharing outside the department was reported in 4% (n=20) of the cases in cohort 2, and in 7% (n=21) of the cases in cohort 3. Sharing outside the department was not reported in any cases in cohort 1.

Routines

Over time, proposals for actions concerning updating or developing new routines became more common in the investigations. In cohorts 2 and 3, there were significantly more cases featuring the proposed development of new routines when compared with the number of cases for which an absence of routines was identified. In all cohorts, the number of revisions exceeded the number of identified dysfunctional routines. Non-adherence to existing routines was highlighted in almost one-third of the cases in cohort 3.

Organizational hierarchy

For both deficiencies and proposed actions, the microsystem perspective remained dominant over the 13-year period. However, cohorts 2 and 3 showed a significant increase in the proportion of deficiencies and actions at the mesosystem level compared with cohort 1. No deficiencies were found at the macrosystem level.

Decisions of the supervisory authority

In all cohorts, the majority of the reports from the healthcare providers were approved by the supervisory authority without further requirements. Immediate approval was provided for 59% (n=164) of the reports for cohort 1, 65% (n=284) for cohort 2, and 59% (n=186) for cohort 3. Meanwhile, inspections of the healthcare provider occurred for 9% (n=25) of the cases in cohort 1, 6% (n=25) of those in cohort 2, and 4% (n=13) of those in cohort 3. A physician employed at the supervisory authority was involved in the decision-making for 89% (n=249) of the cases in cohort 1, in 4% (n=17) of the cases in cohort 2, and in 13% (n=40) of the cases in cohort 3.
5.3. Study III

Study III addresses the third specific aim of the thesis; to describe the problems with the current approaches to investigations of patient harm applicable to investigations of suicides, and to propose and discuss ways to move forward, based on a scoping literature review. Included literature originated from Europe, North America, and Australia.

Problems with current approaches to investigations

The literature on investigations revealed a number of weaknesses in current approaches, casting doubt on the findings of investigations and limit the scope and nature of actions taken to reduce suicide. The main problems in current approaches to investigations were found to be:

- **Failure to embrace the perspective of the patient and family**: lack of the perspectives from the patient or their family on the incident (Care Quality Commission, 2016; Vine & Mulder, 2013).

- **Not addressing all relevant factors**: analysis of variables of significance for suicide behaviour, such as risk factors, suicide reducing interventions and care availability was rare (Janofsky, 2009; Vine & Mulder, 2013; Vrklevski et al., 2018).

- **A short timeframe for analysis**: investigations usually focussed on a relatively brief, defined time period prior to the suicide or on the last contacts with healthcare before an incident (Fröding et al., 2021; Nicolini et al., 2011b), despite it is known that persons who take their lies usually suffer a long period of decline. Analyses which focus only on the last contacts with healthcare will fail to uncover progressive degradations in care over time, and equally fail to appreciate past care that was supportive and positive for the patient (Leistikow et al., 2017; Vincent et al., 2017).

- **Investigations focus are too narrowly focused on one healthcare provider**: most investigations were performed by a local leader within a single unit (the last unit caring for the patient) without any involvement of other healthcare providers who were involved (Fröding et al., 2021; Wrigstad et al., 2014).
- Failure to consider a deeper system perspective: investigators tended to finalise their analyses after identifying human error, rather than proceeding to identify wider organisational and system problems (Mills et al., 2006; Percarpio et al., 2008). This narrow focus on individual failings inevitably leads to inadequate solutions and recommendations, such as reminders or new routines, rather than those that address the deeper underlying problems (Fröding et al., 2021; Nicolini et al., 2011b; Wrigstad et al., 2014).

- The experience and expertise of the investigation team: There are wide differences in experience and competence within investigation teams, leading to variations in performance and approach to investigations (Macrae, 2014; Macrae, 2016; Macrae & Vincent, 2014; Nicolini et al., 2011b; Wu et al., 2008). Furthermore, the investigation teams often lack important clinical perspectives with the absence of doctors being a particular problem (Elfström et al., 2009; Nicolini et al., 2011a; Roos af Hjelmsäter et al., 2019; Woloshynowych et al., 2005).

Moving forward

Based on the review, we propose changes in the performance of investigations to address the identified problems. These issues are interlinked and sometimes there is no sharp separation between them. Involving the family, for instance, will invariably expand the scope and time scale of the investigation. We suggest the following changes:

- Make efforts to understand the perspective of the patient: the involved patient is central in an incident of patient harm, and if preventive suicide care is to be successful, investigators have to endeavour to understand the resources and the needs of the suicidal patient (Vrklevski et al., 2018). Contributions by family, carers, and significant others to the analysis should broaden and deepen the understanding of the patients’ experiences (Bouwman et al., 2018; Lang et al., 2016; O’Hara et al., 2018; Van Tilburg et al., 2006; Weissman et al., 2008; Wiig et al., 2021; Zimmerman & Amori, 2007).

- Integrate variables of significance for suicide behaviour, prevention, and safety: integration of modifiable risk factors and triggers into the analyses should improve the possibilities to understand the essentials of the underlying individual process of suicidal behaviour (Vine & Mulder, 2013). Analysis of
performed and/or possible interventions of current influencing factors is important in the analysis of risk management over time, and raises possibilities to find improvement in the work with suicide prevention (Vrklevski et al., 2018).

- **Learn from recoveries and periods of stability:** learning from performance of all that goes well, successes and recoveries, as well as from failures and close calls, should bring new valuable perspectives (Braithwaite et al., 2015; Leistikow et al., 2017; Vincent & Amalberti, 2016). Attention to episodes of successful recoveries from acute suicide crises or a suicide attempt and periods of stability could have implications for the understanding of individual recovery strategies and how healthcare manage to cope individual needs, factors significant for improving suicide prevention in healthcare (Bowers et al., 2011; Vincent et al., 2017).

- **Widen the perspective of time:** the investigations should analyse all the relevant factors leading to the eventual suicide. Failures of longer courses of care are often due to an accumulation and combination of problems, errors, and system vulnerabilities over time, and to uncover potential progressive degradations in care, the analysis has to span over longer periods (Barker et al., 2017; Hutchinson et al., 2010; Vincent & Amalberti, 2016; Vincent et al., 2017).

- **Widen the system perspective:** involve healthcare providers, family, carers, and other significant persons in the investigations, and embrace all relevant contexts, across organisations including the home and community environment, to understand the whole picture (Zimmerman & Amori, 2007).

- **External investigation leaders with expertise in incident analysis and healthcare:** ideally, the leaders of the investigation should be external and independent to the involved units. Local investigators might be under the influence of hierarchical tensions and endeavour to preserve interpersonal relationships, which may result in compromises in accuracy and depth of the analysis with a focus on what is possible rather than what is needed (Macrae & Vincent, 2014; Nicolini et al., 2011a; Nicolini et al., 2011b). Furthermore, the investigation leaders need substantial competence and experience in the chosen investigation method and patient safety to ensure sufficient quality in
the investigation (Macrae, 2016; Macrae & Vincent, 2014; Peerally et al., 2017; Vincent & Amalberti, 2015, 2016; Woloshynowycz et al., 2005).

- Multidisciplinary analysis teams with expertise in suicidology and broad competence in healthcare service: to enable analyses covering all the adequate aspects of the care (Vrklevski et al., 2018). Beside professional expertise, knowledge of the local conditions and policies is needed to manage the careful and inter-professional considerations of care at all levels that are needed to find meaningful actions at severe patient harms.

5.4. Study IV

This study addresses the fourth specific aim of the thesis; to explore the relevance of our framework for investigations, provide a deeper understanding of what persons with lived experience and professionals consider being most important to analyse in the investigations of healthcare before suicide to learn and improve the care of suicidal patients, and how this can be done. The core research questions were two: 1) What is most important to analyse in the investigations of healthcare before suicide? and 2) How can this be done?

The findings were similar for the persons with lived experience and the professionals. All the responders, both the persons with lived experience and the professionals, were positive and supportive to the content in the proposed framework and considered it to be relevant and valuable to use in the analyses of suicide incidents. We identified two main themes; a holistic approach and effectiveness of the investigation, with five and four subthemes respectively.

The first theme, a holistic approach, centred on the first core research question and described the participants’ perceptions of what the investigations of suicide cases should include in the analysis to be valuable for learning, understanding and improvement of the healthcare of suicidal patients. Prominent was the view of the importance to grasp the whole situation of the deceased. To manage this, the participants argued that the investigations should embrace a longer period of time, involve the relevant system of the patient, and integrate the perspective and expectations of the patient, factors of significance in care, and suicidality. The five subthemes were the same for
the professionals and the persons with lived experience and are briefly described below.

**Time** Extension of the time period embraced by the analysis was described as one of the most important factors to enable learning and understanding of the care process preceding suicide. Analysis of a longer time period was regarded to be necessary to make it possible to uncover accumulation and combination of possible small or big problems, potential errors and vulnerabilities over time, which together intervened and influenced the process. The participants suggested that the analysis should start from the point of time when the disease or relevant problem (e.g., relational, financial, unemployment) first started. The length of time period included in the analysis must therefore vary between cases.

**System,** in this study understood as the healthcare units and the other stakeholders that the patients face in their daily life and care, was emphasised by the participants to be analysed as a whole. The participants described negative consequences for the care by the strict boundaries between the stakeholders with focus on their own specific part, and highlighted that the investigations have to embrace and analyse the system as a whole.

**Patient’s perspective and expectations** How the patient experienced the given healthcare, the confidence in care, how the healthcare managed to meet the patients’ expectations and the needs, were considered to be significant parts to analyse in the investigation to understand the course over time and the suicidal behaviour. In the investigations, attention should be paid to the caregivers’ ability to stay patient-centred over time, and evaluation of the care together with the patient should be one part to ensure that the care meet the needs of the patient.

**Suicidality** Analysis of assessment of suicidality and suicide risk were regarded as central parts of the investigations by the participants, as the assessment could guide further decision makings of care, treatment, and suicide reducing interventions. Several participants emphasised the need for involvement of significant others in the suicide risk assessments, as the suicidal person can be ambivalent in the acceptance of care and might underplay the risks. In practice, this would imply a substantial wider involvement of significant others in the healthcare.
Factors of significance in the care involved attention to variables risking to be missed without the active focus; negligence, competence, and interventions that despite the final outcome were good or successful. Participants regarded that attention should be paid to things in the care that were successful, as well as to failures. Analysis of stable periods could reveal useful coping strategies, and the need to learn from those were highlighted by both the own experienced and the professionals.

The second theme; effectiveness of the investigation, described how the investigation should be performed to enable sufficient quality in the analysis of the identified areas in the first theme. Here, some of the persons with lived experience of suicidality had less suggestions and referred to the absence of experience of performing an incident analysis. The importance of involvement of all current stakeholders in the investigation process to understand the suicidal persons’ situation and appropriate competences of the investigation leaders and analysis teams were highlighted by both persons with lived experience and professionals. The remaining subthemes; prioritising cases for extensive analysis and the use of a template to ensure that the investigations include all relevant factors, were found among the professionals.

Involvement of all stakeholders of relevance for the patient in the investigation process was highlighted to be crucial to manage the holistic approach. To enable understanding of the whole process of given care, all involved stakeholders need to be included in the investigation. Beside involved staff, family and significant other persons for the patient were suggested to be possible informants in the analysis to grasp the whole picture in the investigation. Their part in the analysis was emphasised to be active participation, and not to be restricted to readers of the finished investigation.

Competences of investigator leaders and analysis team in suicidology and healthcare were highlighted as prerequisites to make the investigations valuable and to ensure sufficient quality in the investigations. Further, the investigation leaders should be extern and independent to the involved units; local investigators might have difficulties to be objective and endeavour to preserve interpersonal relationships.

Prioritised cases for extensive analysis The complex cases with several involved care givers were considered to have the largest potential for learning,
and were suggested to be prioritised for extensive analysis. However, the consequences of such triage were also problematized. Analyses of all suicides enable understanding of changes over time and the whole.

**Template** The use of a template that stipulates what the investigations should include could ensure attention to variables of significance and serve as a guide for the investigators. The template was suggested to include checklists and issues of significant importance to consider in the analysis of a suicide incident as a patient harm.
The overall aim of this thesis was to increase the knowledge and understanding of suicide as an incident of patient harm, and to find possibilities of changes in the approach to suicide investigations for learning to improve suicide prevention in healthcare.

I started my research with the first research question: What can we learn about suicide as an incident of patient harm from the current approaches to investigations of suicide? This question was explored in study I and II, and from these studies I came to the conclusion that the current approaches to investigations of suicide failed to effectively improve suicide prevention in Swedish healthcare. The expected increased learning and improvement did not occur. It became clear that we need new methods and theories that can be turned into practice in the work with patient safety. Merging the science fields of suicidology and patient safety could contribute with new knowledge and possibilities to progress. This led to the second research question: What changes in the healthcare’s investigations of suicide could advance learning and improvement in the care of suicidal patients? This question was explored in study III, a scoping literature review. To ensure the relevancy for the persons concerned, we realized that a broad group of stakeholders must be involved in this work; persons with lived experience of suicidality, suicide researchers, patient safety leaders, and officials at the supervisory authorities, which resulted in study IV.

Outline of the discussion section. I will start to discuss the results of the studies related to the two research questions. In the next part, I will discuss the strengths and limitations that must be taken into consideration in the interpretation of the results. Finally, I will make an effort to synthesize the findings into conclusions answering the two research questions, and point out suggestions for practical implications, possible changes in policy and practice, and issues for future research.
6.1. What can we learn about suicide as an incident of patient harm from the current approaches to investigations of suicide?

The discussion of the first question was split into two parts:

1) What did we learn about the suicide cases that were reported as incidents of patient harm?

2) What did we learn from the investigations of suicide reported as incidents of patient harm?

A synthesis of how we can understand suicide as patient harm follows.

6.1.1. Suicide cases reported to the supervisory authority as incidents of patient harm

Healthcare contacts before suicide and reporting healthcare provider

The healthcare contacts before suicide in our studies were in line with national and international studies. A large proportion of the persons was in contact with healthcare before death, primarily with primary care and outpatient psychiatric care. One third of the patients received inpatient care during the three months before death, which might indicate that these patients could have profited from a longer period of inpatient care. However, longer times of inpatient care enhance the risk of other kinds of patient harm and stigma (Large et al., 2017), and involuntary care brings ethical dilemmas. A greater awareness of mental illness and identification of individuals at risk of suicide in outpatient care should be of importance in the prevention of suicides.

Our studies confirmed that most suicide cases reported to the supervisory authority as incidents of patient harm were reported by a psychiatry healthcare provider. Despite the fact that as many patients were in contact with primary care as with specialized psychiatric care during the last month, more than two-thirds of the incidents were reported by a psychiatric healthcare provider and only around one-fifth by primary care. However, we cannot make the conclusion that the suicides that occurred after contact with psychiatric healthcare were preventable to a larger extent than other suicides. The reasons
why psychiatric healthcare providers more often reported suicide cases were probably multiple. First, the suicide must come to the provider’s attention. In Sweden we do not have an automatic feedback system to healthcare providers when a patient dies, and thereby all suicides probably do not come to the provider’s knowledge. Several aspects can contribute to that deaths by suicide come to psychiatric healthcare providers’ knowledge to a larger extent than to other providers’. In outpatient psychiatric healthcare, with a high frequency of recurrent longitudinal contacts with the patients, the deaths were probably more likely to be detected than in primary care with fewer planned follow-up contacts. Continuity in the contacts with the healthcare might also enhance the probability that next-of-kin to the deceased informed the clinician of the death. Most reported suicides were committed close in time after the last contact with healthcare. Maybe the closer in time after the contact, the higher the probability that the suicide came into the attention of the provider. During the last week before suicide, the contacts with healthcare have been shown to be most frequent with psychiatric healthcare (Bergqvist et al., 2022), which might be an explanation of the reporting rate. Further, if the patient was in contact with more than one healthcare provider, it is likely that it was the last-visit provider that made the investigation and reported the suicide.

Another possibility why more cases were reported by a psychiatric healthcare provider could be that the regulation of reporting suicide cases was more known by psychiatric healthcare providers. A third reason may be a greater awareness in psychiatric care of suicides as possible incidents of patient harm. Factors intervening with suicidal behaviour and the possibilities for suicide prevention should be well known in psychiatric care.

Reported cases and suicides in the population

We found the gender distribution of cases reported to the supervisory authority to be in line with the official male-female suicide ratio in Sweden (The National Board of Health and Welfare, 2022) and in accordance with the findings in a Swedish study of suicides (Bergqvist et al., 2022). This suggests that gender did not influence the provider’s assessment to report suicide cases.

Furthermore, the ages of the reported suicides cases followed the national statistics in Sweden, decreasing over the years. There has been a decrease in the suicide rate in the ages over 65 years during the last decades in Sweden,
but in the youngest (15-24-years-olds) the rate is not diminishing (The National Board of Health and Welfare, 2022). This should be taken into consideration in the planning of suicide prevention interventions on a population level. Education on mental illness and suicidality in schools could be one way to address this issue.

Around half of the persons in our studies had made at least one suicide attempt before, which is in line with previous studies in Sweden. However, more than half die by their first suicide attempt. A Swedish study found that persons with prior suicide attempts were in contact with healthcare closer in time to death compared with those who died at the first attempt (Probert-Lindström et al., 2021). This suggests that the number of individuals with a previous suicide attempt reported to the authority could be expected to be higher, at least during the years of mandatory reporting of cases in contact within four weeks before suicide. The Swedish study mentioned above also found that persons with prior suicide attempts to a higher degree were diagnosed with a psychiatric disorder and were assessed with an elevated suicide risk to a larger extent, raising the question if the persons who die at their first attempt is an underdiagnosed group with possible impacts of receiving appropriate treatment. The vast majority of the individuals in our studies had a documented diagnosis of a psychiatric disorder, most commonly affective disorder, anxiety disorder, and substance abuse, in line with previous studies of suicides. However, in many cases the documented diagnoses and treatment were not evaluated in the contacts with healthcare and neither problematized in the providers’ investigations in our studies.

Most persons that make suicide attempts survive, but the elevated risk for death from suicide persists over decades. Using the perspective of safety-II, learning from the successful treatment of patients who have survived suicidal crises and suicide attempts could bring insights helpful to improve the care of suicidal patients.

**Place and method for suicide**

Less than ten percent of the reported suicides occurred inside hospitals, which differ from the usual types of patient harm reported to the supervisory authority. This highlights the need of expanding the awareness and work with
patient safety to include wider aspects than hospitals, previously pointed out by Vincent and Amalberti (Vincent & Amalberti, 2016).

Inside hospitals, the most frequent used method for suicide was hanging. Studies in England over the last decades have showed falling rates of in-patient suicide, probably partly due to conscious work with safer wards such as reduction of ligature points and un-breakable windows with a limited opening (Kapur et al., 2013; While et al., 2012). Learning from these efforts should contribute to safer wards in other countries as well.

Hanging was also the most used suicide method overall in our studies, followed by intoxication. Compared to the official statistics in Sweden, intoxication had a lower proportion in our studies. This was a bit surprising, as we know that restriction to means is one of the most efficient methods for preventing suicides. The possibilities for healthcare to restrict access to means for intoxication should be more manageable than to the means for hanging. For example, smaller packets of analgesics and the withdrawal of particularly toxic analgesics have been shown to be efficient suicide prevention interventions (Hawton et al., 2011; Hawton et al., 2009; Hawton et al., 2013; Hawton et al., 2012; Hawton et al., 2011). Reporting of deaths by intoxications should enable increased learning of the pharmaceuticals used in suicides, and thereby contribute to further considerations of actions regarding prescriptions and pharmaceuticals availability. In clinical practice, careful considerations in the prescription of potential lethal pharmaceuticals should be an integrated part in the daily work, contribute to safe healthcare, and restrict access to means for suicide.

In our interview study, some respondents emphasized that the suicide incident should be the starting point of the analysis, as it could contribute with valuable clues to the suicidal process. However, in more than ten percent of the investigations reviewed in our studies the place and method were not mentioned at all. Maybe intoxications were a relatively large proportion of these cases, but the absence of descriptions reduce the possibilities to gain knowledge to make the healthcare safer. A careful analysis of the event, the actual circumstances, and sequences preceding the death could be of importance in the understanding of the progression of the suicidal behaviour and in the analysis of risk management, in line with the ITA-theories. The
investigations reviewed in our studies usually lacked this kind of descriptions and problematization.

6.1.2. Learnings from the investigations of healthcare

The studies in this thesis illustrate how suicide as a possible incident of patient harm is investigated in a nation where a RCA-inspired method is the recommended method, and what kind of learning and change in the healthcare systems that are possible with that approach. The deficiencies in healthcare that were reported by the providers in their investigations were described to be contributing factors to the suicide. This way of describing contributing factors is in accordance to Swedish law and the predominant RCA-inspired investigation method. Healthcare and the suicidal process are both complex processes, and with current knowledge in suicidology and patient safety, such a linear approach seems problematic.

The focus in the investigations was found to be at the micro-level, narrow in both time and space, not enabling understanding of the process and the factors intervening the suicidal behaviour. This focus not only comes with a risk to miss important learning and improvement on a systemic level, it may also lead to increased burden and traumatization of the clinician, survivor victim (Malik et al., 2021). Consequences for the clinician may be persistent negative reactions, low mood, irritability, sleeping disturbances, preoccupation with the suicide, and decreased self-confidence with impact on future career (Alexander et al., 2000). Follow-up of the provider should be important and a part of a just safety culture.

The cultural shift in understanding patient safety incidents from one that focuses on accountability at the human level (identifying who committed the incident) to the organizational responsibility at the systems level (identifying what and why it happened in a just and fair environment, and how the system can prevent it from happening again) was not very obvious in the reviewed reports. Even though individual mistakes were not reported demonstratively, the most common deficiencies were reported to be in suicide risk assessments and treatment, and not considering why these shortcomings occurred. A specific action or mistake by an individual might be seen as the immediate cause of an incident. However, it is well-known that a broader analysis of the
systems usually reveals a series of events and departures from safe practice that involve complex interactions of multiple variables, including human behaviour, organizational, technical, and sociocultural factors (Kohn, 2000; Vincent et al., 1998). Study II showed that notifications of patient related factors reported as contributory to the suicide in the investigations disappeared over time. That might be a result of the supervisory authority’s efforts on finding deficiencies on system level.

Reflections on patient perspectives, fluctuations in suicidality over time, and possibilities for suicide prevention interventions, competence of the staff, and organization structures were generally nonexistent in the reviewed investigations in the studies. The results probably reflect the investigators’ knowledge and understanding of suicide, and what they consider can be fixed more than the actual circumstances and needs.

The real purpose of investigations of adverse events in healthcare should be to reveal gaps and inadequacies in the healthcare system, to learn, and to find effective and meaningful actions leading to sustainable improvement of healthcare (Vincent, 2004). The shortcomings in the current approaches to investigation of suicide that we found in study III cast doubt on the findings in the investigations in study I and II. However, the shortcomings primarily concern the performance, making the analysis incomplete and shallow, resulting in missed opportunities of learning. In our pragmatic approach, the deficiencies that were identified and reported by the providers, were taken for real, and some results are relevant to discuss.

**Reported deficiencies in healthcare**

The deficiencies in healthcare reported as contributory to the suicide centered on the final patient contact with healthcare services in all cohorts. Deficiencies were reported in around half of the investigations during the period of mandatory reporting. Cohort 3 showed the largest proportion of deficiencies in healthcare, which was to be expected as in this cohort only the suicides considered as incidents of severe patient harm (prevented if different actions had been taken by healthcare professionals) were to be reported. With this in consideration, deficiencies should have been reported in all cases in cohort 3. One reason why some of these cases were reported even without any identified
deficiencies could be that the providers not were aware of the change in law. Another reason could be that the provider wanted an external evaluation by the supervisory authority.

Over the years, the frequencies of deficiencies in the categories changed, but remained at micro-level and most often related to suicide risk assessment, external and internal communication, and treatment.

**Suicide risk assessment – from prediction to prevention**

In a majority (64-71%) of the reviewed cases there was no documentation of an elevated risk for suicide at the contacts with healthcare during the last three months before the death. Only 7-10% of the patients had a notification of high suicide risk in the patient record in the last three months before death. This small numbers probably reflect the challenges in prediction of human behaviour, but in some cases, may also indicate deficiencies in competence or training in risk assessment. In Sweden often the least experienced physicians meet a large proportion of the patients attending the emergency departments. Inadequacies in the assessment of risk, such as ‘low risk’ in the presence of multiple risk factors and acute triggers (e.g., divorce, loss of someone dear), were reported in a few cases. However, the findings may also mirror the success of healthcare in cases when suicide risk was assessed as high and then followed by preventive actions helping the patient to survive. Including a longer time period in the investigation of suicide, and also with a focus on what went well and was helpful, could enable learning these lessons.

In cohort 1, the deficiencies in suicide risk assessment related to an absence of local guidelines for suicide risk assessment, which resulted in actions of written local policies and guidelines. In cohort 2 and 3, the reported deficiencies in suicide risk assessment related to non-adherence to existing local policy or guidelines. Analyses of why the clinicians did not follow the policies were missing in the investigations.

I was concerned by the high frequency of absence of documentation of suicide risk in the records during the last months before suicide (49% in cohort 1, in 25% in cohort 2, and in 38% in cohort 3). Suicide risk assessment is a challenging task. However, these numbers refer to persons that were in contact with healthcare close in time before suicide, in many cases several times and
also receiving inpatient care, most had a diagnosed psychiatric disorder, and half had a known history of suicide attempt. One reflection is that the awareness among healthcare professionals of suicidality, knowledge of suicide risk factors, identification of persons at risk, and documentation must become better. Another factor regards the prerequisites for making a professional examination of the patient; workload, working environment, and enough time for the meeting with the patient. A third aspect is the healthcare professionals’ doubts of suicide risk assessment as a tool for prediction. A fourth concern is the stigmatization around suicidality, affecting both the professionals’ and the patients’ will to discuss this issue.

The current ITA suicide theories imply that suicidality is the result of the interactions between multiple different variables. These variables vary over time and contexts, causing fluctuations in suicidality. Following this complexity, suicide risk assessments, suicide risk instruments, and risk scales are incapable of providing accurate estimations and timely predictions of suicide (Carter et al., 2017; Runeson et al., 2017). This raises the question of the value of these assessments.

In daily work, healthcare professionals frequently have to make trade-offs between the value of asking specific questions, performing a thorough investigation, using a questionnaire, checklists, and other instruments, and available time and resources, the ETTO-principle (Hollnagel, 2009). As the suicide risk in the general population is low, probably clinicians in some circumstances make the trade-off that a suicide risk assessment cost more effort than the gained value. A recent study among healthcare professionals in psychiatric healthcare in Norway found a good familiarity with the formal requirements and guidelines for suicide risk assessments, but the requirements were commonly perceived to be too time-consuming and having a legalistic focus rather than clinical perspectives (Qin & Larsen, 2021). To enable to make this trade-off appropriate, the clinicians have to be familiar with the important exceptions of some suicide high-risk populations and situations.

In the traditional linear cause-action model, referred to as safety-I, the main purpose of risk assessments is to accurately estimate the current risk by identification of relevant scenarios and calculating associated probabilities. Traditional risk assessments performed in this way, have been criticized to
have strong limitations in capturing important aspects of safety; they are not able to properly reflect variability, human and organizational aspects, and dependencies between system variables (Aven, 2022).

Risk assessments of complex behaviour, such as suicidality, are more about understanding risk than about accurately estimating risk, and aim to reduce risk as a part of the intervention and treatment. In that perspective, individuals at high risk can be identified, and the risk assessments can provide relevant information for clinical decisions of level of care and design of a treatment plan with the purpose to reduce the risk by targeting risks and enhancing safety. Meeting healthcare professionals who take their time, show interest and compassion, and who confirm feelings of despair and hopelessness might inspire suicidal patients with hope and struggle for life (Vatne & Naden, 2018), and thereby being an intervention. Involving the patient to be an active participant in the suicide risk assessment should enhance the quality; empowering patients in their treatment is shown not only to improve health outcomes, but also to effectively reduce safety lapses (Schumacher et al., 2013).

In the investigations in our studies, there was no problematization around the suicide risk assessments, what clinical consequences that followed the assessment or the absence of assessment. Stating non-adherence to policies and guidelines and to remind of these in a staff meeting are not sufficient to progress on this issue.

To my opinion, there is need for a shift in how we use the suicide risk assessments clinically. The main purpose of the risk assessment cannot be to predict suicide. Instead, the purpose should be to find patients with suicidality, explore interventions that reduce the individual suicidality, and integrate these in the care plan, interventions and treatment. Maybe one should assess the suicidality, not the suicide risk. Understanding suicide risk assessment as a tool for reduction of suicidality might motivate clinicians to talk about suicidality even in a crowded day.

**Deficiencies in communication and treatment**

Study II showed that deficiencies in communication between healthcare providers, and between healthcare providers and patients and family, reported
as contributory causes to suicide increased over the years. Communication in healthcare may be affected by high staff turn-over, inexperienced staff, fatigue, and interpersonal conflicts. These shortcomings are problematic as communication is essential to keep healthcare safe, and specifically relevant for patients with suicidality who often suffer from mental illness and cognitive disturbances, and who have several contacts with outpatient and inpatient healthcare providers. Improvement of communication standards during handovers between healthcare providers and transitions within and between healthcare settings could be one way to improve patient safety and quality of care for these patients.

The frequency of deficiencies in treatment, such as complications or side-effects of medication/treatment, delayed, inadequate or wrong medication/treatment, shortcomings in follow-up, and mistakes in the doctors’ prescriptions, increased over the years and was present in almost one third of the patients in cohort 3. A higher proportion of deficiencies in education and competence, often connected to deficiencies in human resources and internal communication, was also reported in this cohort. This suggests difficulties in recruiting personnel with adequate competence, shortcomings in the introduction of new staff, and complications integrating locum doctors. High staff turnover in mental healthcare has been shown to be a hindrance to the implementation of evidence-based interventions (Woltmann et al., 2008), which may affect treatment outcome and patient safety. The population in cohort 3 was somewhat younger and with some higher degree of psychiatric diagnoses, which suggests that this was a more complex group with a need of support from different care providers, requiring external collaboration and possibly, more complex treatment interventions.

Actions – education and routines

The most common actions recommended in the investigations for all cohorts were updating existing routines or developing new ones, and educational actions – these are potentially unsustainable and person-based measures. The actions of education to address identified shortcomings in the healthcare were usually a brief case report, a reminder, or information of the update of a routine in a staff meeting. The tendency of only providing superficial recommendations of educational sessions, reminders of existing policies, or
announcements of new ones have been reported in international studies of RCA before (Kellogg et al., 2017; Lee et al., 2014).

All cohorts, but most obviously cohort 3, showed a mismatch between the numbers of cases where an absence of routines was noted and the numbers of cases for which the development of new routines was recommended. Furthermore, the number of actions to revise routines exceeded the number of identified cases of dysfunctional routines. Non-adherence to existing routines was highlighted in almost one-third of the cases in cohort 3, and the solutions seemed to focus on creating new routines instead of ensuring adherence, preconditions, and usability, that probably would be more relevant and useful. The prerequisites for adherence or reflections on why adherence to existing routines failed from a system perspective were generally missing in the investigations.

The focus on routines reflects the current predominant perspectives of safety-I, but was also highlighted by the supervisory authority in the report of supervised suicides in Sweden 2006 (The National Board of Health and Welfare, 2007). Constraints and requirements on providers, such as large caseloads, limited time to see patients, and administrative requirements, may increase the risk of error and non-adherence to routines. Having sufficient time to see the patient to enable an appropriate clinical assessment of diagnosis, suicidality, and treatment is crucial for safety. Safe procedures are seen as fundamental in safe healthcare, however, these are frameworks and must match the reality of front-line staff and their patients. Adjustments by healthcare professionals to match the inevitable variabilities of conditions that is the daily reality in healthcare are essential to maintain safety (Hollnagel et al., 2015). Thereby, precise detailed descriptions of how work should be done in all situations is not possible or even desirable.

The mandatory reporting with expectations of actions may led to interventions such as a new or changed routine after one single incident. This changing of routines after one incident may implicate risks, conclusions from aggregated cases should be more reliable. This procedure in organizations that from the analysis of a single case implement an intervention, and rarely assess how it plays out in practice or unintended consequences, has been described before (Shojania, 2021).
The dominance of person-based actions at the microsystem level shown in our studies is not unique for the Swedish setting. The same findings were reported in a review from 2017 (Kellogg et al., 2017), and other studies have reported that investigators tend to complete their analyses after identifying human error, rather than proceeding to identify system-based problems (Peerally et al., 2017; Percarpio et al., 2008). Attributing issues to human error easily leads to person-based solutions, and creates a focus on what is possible rather than what is needed. Recurrent widespread microsystem issues require whole-system responses at meso or macro level to be solved.

The studies in this thesis did not explore to what extent the actions proposed in the investigation were implemented. Previous studies of RCA have shown that despite much time and efforts invested, the recommendations produced may not live up to the expectations of clinical improvement and not all proposed measures were implemented (Iedema et al., 2008; Martin-Delgado et al., 2020; Peerally et al., 2017; Percarpio et al., 2008).

Learning and sharing from investigations

Any lessons learned and the sharing of experiences obtained from cases and investigations usually remained within the department in question. The overall aim of the incident-reporting system is to make healthcare safer, which presupposes learning. However, learning that extends beyond the staff involved in the incident requires information sharing. The analysis of the reports in our studies showed that sharing information between departments was planned in only a few percentage of the cases. This was in concordance with a previous Swedish study on investigations after severe patient harm (Wrigstad et al., 2014).

Learning is a complex social and participative process that involves people actively reflecting on and organizing shared knowledge and practices (Macrae, 2017). Learning from incidents begin with the incident reports, and to improve safety these require broad, in-depth, high-quality investigations and careful planning and follow-up of the implementation of corrective actions to ensure they are sustainable over time. To really manage persistent knowledge and learning from incident reports, feedback must include more than a passive, brief report in a staff meeting. Active training of staff in different possible patient scenarios is one possibility.
The overall goal with reporting and investigating incidents should be to enhance patient safety and prevent the same type of incident from happening again. This requires the ability to find and to implement appropriate actions to address the identified contributory factors to the incident. Leistikow et al. suggest that the focus in the investigations should be on learning, not the outcome, and thereby shift from what was learned to how the providers learn (Leistikow et al., 2017).

Supervisory authority

The distribution of the supervisory authority’s decisions remained stable over the years; most reports were approved without further actions. In a small number of cases, the authority made a site visit, but the frequency of such visits declined as time passed. The engagement of physicians at the authority in the decisions declined significantly over the years. The findings may reflect changed working procedures at the authority, but may also signal decreasing engagement in these investigations to the healthcare providers.

In Sweden, the current role of the supervisory authority regarding internal investigations of incidents of patient harm is to decide whether the investigation fulfill the requirements stated in the regulations or not. Supervision can be a strong tool and incentive for improvement and development of healthcare services (Leistikow et al., 2017) but the results in our studies suggest that the authority did not achieve this. The reporting and supervisory procedure turned out to be a process of information transfer between the healthcare providers and the authority, rather than a means of creating participative improvement strengthening patient safety.

Integrating new perspectives of safety and learning in supervisions could imply a shift from a focus on patient harm to quality and the positive outcomes of healthcare, proactive patient safety work, patient safety culture, and commitment of management. Examples could be follow-up of improvement in healthcare, the providers’ abilities to identify appropriate corrective actions, how healthcare works and what adaptations take place in the event of unforeseen events or high workload (resilience), and implementation of proactive working methods to strengthen the patient safety work close to the patient.
6.1.3. How can we understand suicide as an incident of patient harm?

Central in the concept of patient harm as defined in the Swedish Patient Safety Act is *avoidability*, i.e., the patient harm was possible to prevent if appropriate actions had been taken by healthcare. All patient harms resulting in suicide are per definition severe patient harms as the person died, and regulated by law to be investigated and reported to the supervisory authority for supervision.

The assessment of if other actions in the contacts with healthcare could have prevented a suicide is complex. Suicide is usually the final end of the complex interplay of several variables of different kinds, with different impacts in different contexts, varying over time and between individuals. In many cases, the suicidal persons suffered from different disorders and psychosocial problems, and were in contact with several healthcare providers and other stakeholders before death. Knowledge and awareness among healthcare professionals of suicidality and factors enhancing suicide risk, risk situations, and triggers imply good possibilities to find patients at risk for suicide. Furthermore, evidence based suicide prevention interventions enable possibilities for the healthcare professionals to meet patients with suicidality with effective suicide reducing interventions.

However, there is no available tool or reliable method to accurately predict who will die by suicide and when. Most suicides occur outside the hospitals, in the home of the patient with no witnesses around. Suicide is not a disease; it is an unsafe behaviour, a destructive act performed by the patient himself/herself. Many suicides are probably impulsive. In very few cases we do know exactly what happened during the last hours or minutes before death, or what eventually resulted in the fatal decision of the suicide act.

As a consequence, the assessment of suicide as an incident of patient harm, seems in many cases to be difficult, and to some extent speculative. Furthermore, in the absence of guidelines, the assessments probably differ between different professionals who assess the cases.

Reporting of incidents of patient harm to the supervisory authority is one possibility that we have to enhance knowledge of suicide as patient harm. As
to be expected, after the mandatory reporting of suicide cases close in time after healthcare contact was withdrawn and only cases regarded as severe patient harm are to be reported, the number of reports to the supervisory authority fell dramatically. Following this, our current national reporting system of severe patient harm cannot provide the supervisory authority with a representative view of safety issues regarding the healthcare of suicidal patients. The reported number cannot be seen as a means to measure safety over time.

Instead of making the most often difficult and to some extent speculative assessment if a suicide was possible to prevent if other actions had been performed in the contacts with healthcare, I suggest the assessment of patient harm to be based on the healthcare providers’ performance of risk management over time in the individual case. The management of factors of importance for safe healthcare for suicidal patients should be analysed. From my studies and literature, I propose a framework that includes these factors to guide this assessment (Brickell, 2009; Brickell & McLean, 2011; Brodsky et al., 2018; Fröding et al., 2022; Hawton et al., 2022; Nath & Marcus, 2006; Vincent et al., 1998; Wasserman et al., 2012). The framework should ensure that relevant factors for risk management in the care of suicidal patients are taken into consideration and facilitate a more standardized and equal assessment of suicide as patient harm (table 3).

Table 3. Framework to assess the healthcare provider’s performance of risk management over time and guide the assessment of patient harm

<table>
<thead>
<tr>
<th>Assess whether the management and care were appropriate to meet the patient’s symptoms and individual needs, and in accordance to best practice</th>
<th>1*</th>
<th>2**</th>
<th>3***</th>
<th>4****</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Diagnostics</strong></td>
<td>Investigations &amp; examinations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diagnosis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Differential diagnosis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Treatment</td>
<td>Appropriateness for diagnosis &amp; symptom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Follow-up &amp; evaluation over time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Level of care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Need for involuntary care for psychiatric disorder or substance use was considered</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Care planning</td>
<td>Care plan &amp; crisis plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient involvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Suicidality</td>
<td>Assessment of suicidality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inventory of risk factors, risk situations, and triggers (i.e., previous suicide attempt, heredity, mental illness, substance use, acute crisis, personal losses, problem inventory)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Performance of suicide reducing interventions (i.e., symptom reduction, follow-up, involvement of next-of-kin, inpatient care, supervision, restriction of access to means, crisis plan)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Resources, professionals</td>
<td>Continuity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Competence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Availability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Cooperation, communication &amp; information</td>
<td>Within the unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>With other care givers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>With other stakeholders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>With next-of-kin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Missed appointments</td>
<td>Management &amp; actions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Documentation</td>
<td>The course can be followed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nursing care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Next-of-kins’ perceptions of the care</td>
<td>Treatment and participation in the care to the extent that the patient and the next-of-kins desired</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Availability and ability to meet the needs and expectations of the patient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Other observations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 1. Adequate and relevant management and care in accordance to best practice.

** 2. Deficiencies or deviance from best practice with low probability or no significance for the patient and outcome.

*** 3. Deficiencies or deviance from best practice with possible consequences for the patient and outcome.

**** 4. Major deficiencies or deviance from best practice.
Application and assessment

The assessments of the factors in the framework are to be based on an analysis of the healthcare and course of suicide behaviour over time. Each of the factors in the framework is to be assessed whether the care was adequate to meet the patient’s symptoms and individual needs, and performed in accordance to best practice. Best practice is here defined as the best care in accordance to current evidence (Nordenström & Thor, 2016; Perleth et al., 2001). Instructions and explanations for each of the factors has to be made.

An overall assessment of the outcome should be performed. Lessons from the deviances should be learned and be implemented in the work with improvement to make healthcare safer.

To enable recommendations of cut-offs in the assessment of risk management and patient harm, the framework has to be tested and evaluated in a structured way. For now, I suggest following simple guidelines:

- **The management of the factors are classified to column 1, or a few in column 2: no patient harm.** The healthcare managed the individual’s health problems in an appropriate and reasonable way, the suicide was primarily related to factors outside healthcare.

- **The management of several factors are classified to column 2, or one or several factors are classified to column 3: possible patient harm/risk for patient harm.** Findings of deficiencies or deviance from best practice with possible consequences for the patient and outcome. The assessment of patient harm should be performed by a chief medical officer/senior patient safety leader.

- **The management of one or several factors are classified to column 4: probable patient harm.** Findings of major deficiencies or deviance from best practice, failure of risk management. The assessment of patient harm should be performed by a chief medical officer/senior patient safety leader.
6.1.4. Reflections on the consequences of the reporting of suicides as incidents of patient harm

To my understanding, with the perspectives as a psychiatrist, having been a deputy head of a hospital department of psychiatry, being a chief medical officer/patient safety leader, and researcher on suicide and patient safety, the decade of mandatory reporting of suicides when the patient had been in contact with healthcare had great implications on the idea of suicide as an incident of patient harm in Swedish healthcare, and for psychiatric services in particular. The results in this thesis implicates that the Swedish legislation with mandatory investigations of severe patient harm (lex Maria) as it is used in practice by the healthcare providers and the supervisory authority in suicide cases does not support further learning and improvement in the work with suicide prevention in healthcare. There is need for a cultural shift in this issue to progress in the healthcare for suicidal patients.

The diagram below illustrate the total number of suicide registered in the Swedish statistical database for cause of death 2005-2021 per year (the upper line) (The National Board of Health and Welfare, 2022), and the number of suicide cases reported and supervised by the authority per year (lower line) (Health and Social Care Inspectorate, 2022a; The National Board of Health and Welfare, 2007). Data was not available for the cases reported to the authority in 2008-2012.
The total number of suicides and the number of reported and supervised suicide cases per year in Sweden 2005-2021.

Diagram. The total number of suicides and the number of reported and supervised suicide cases per year in Sweden 2005-2021.

The mandatory reporting probably led to some increased knowledge of suicides in close contact to healthcare and the implementation of routines for suicide risk assessment, but the suicide rate in Sweden did not show any obvious decline during this time. This thesis shows that learning from investigations of suicides has levelled off, the same deficiencies in healthcare and actions to address the deficiencies are reported over the years. Considering that the most common actions to meet identified deficiencies in healthcare were updating existing or developing new routines, and educational actions - potentially unsustainable, person-based interventions, this result should be no surprise. More appropriate approaches of the investigations could result in findings of deficiencies and vulnerabilities in healthcare that are now overlooked and more valuable interventions to improve the healthcare of suicidal patients could be gained.

An establishment of a national quality register for all suicides could be a broad basis for learning and enable conclusions from aggregated data and possible suicide prevention interventions on a macro level.
Crowd out effect?

Suicide was the far most predominant kind of patient harm reported by the psychiatric healthcare providers to the supervisory authority during 2014-2018, 82% of all reports regarded suicide (Health and Social Care Inspectorate, 2019). This raises the question if a consequence of the mandatory reporting of suicide entailed a crowd out effect on the awareness of other kinds of patient harm in psychiatric care in Sweden.

Deaths that occur related to healthcare might be perceived as a contrast to healthcare services’ aim of a high level of patient safety. Investigation of these cases with the aim to find measures to prevent further deaths are unquestionable and also meet essential psychological purposes in a just safety culture. However, also other kinds of severe patient harm can result in considerable consequences and suffering for patients. The main focus on reporting and investigating suicides as incidents of patient harm might have led to missed opportunities to identify and prevent other kinds of patient harm in psychiatry healthcare services.

6.2. What changes in the approach to the investigations of suicide could advance learning and improvement in the care of suicidal patients?

The second research question was primarily addressed by study III and IV. These studies showed that there is a need for several changes in the approach to investigations of suicide incidents, including a longer time period, the patient’s perspective, professionalization of investigations, analyses across organizational boundaries, and focus on learning and improvement to advance learning. To manage these changes, actions are needed on multiple levels, along with support, recommendations, and requirements from law and policymakers, authorities, healthcare providers, researchers, and stakeholders. I will first discuss the main findings in our studies, followed by summarized reflections.
Patient’s perspective and involvement of family

The informants in study IV emphasized that to understand the progress of the suicidal behaviour, the whole situation of the patient must be taken into consideration. To manage this, the investigations need to embrace all relevant contexts across organizations, including the home, community environment, and social service. Following this, informants beside the family may also be involved in the investigation; social workers, staff at school or job, employers, local authorities, or judicial system are all potentially relevant informants who could shed light on the person’s life outside the healthcare, where most people spend the main part of their lives. Missed appointments to healthcare were specifically highlighted by the persons with own experience in study IV to be a warning sign for that the healthcare does not meet the patient’s expectations.

Furthermore, the responders in study IV highlighted that individual factors, personality, life circumstances, and motivators are of great significance and relevance in the progress of suicidal behaviour. To understand how these factors interacted with healthcare over time, the investigators have to endeavor to understand the resources and needs of the suicidal individual. Conscious intentional efforts to shift the perspective of the analysis from the provider’s perspective to explore how the healthcare systems managed to meet the expectations and needs of the patient should provide some insights.

Family and carers usually know more about the patient and the connections to healthcare compared to the healthcare staff, and their contributions in analysis should broaden and deepen the understanding of the patient’s resources, challenges and perspectives that are essential in the contexts of suicidality and healthcare. Healthcare staff members are involved in the care performed at their own units and know only about these specific episodes. Trbovich and Vincent argue for analysis of the patient journey comprising longer time periods, rather than particular events, and with the patient and family as the primary informants (Trbovich & Vincent, 2019). Hence, involvement of families in the analyses after suicide should become the default option, with the important proviso of considering psychological and emotional vulnerability, as the family must deal with the consequences of life without their loved one as well as cope with acute grief. A recent review concluded that most patients and families value to be involved in incident investigations,
but it is important to be flexible and sensitive to both clinical and emotional aspects in the investigation to avoid compounding harm (Ramsey et al., 2022).

Studies of involvement of patients and/or family in incident analysis have showed contributions of new perspectives to the analysis and identification of adverse events not detected by professionals (Bouwman et al., 2018; O’Hara et al., 2018; Wiig et al., 2021). Nevertheless, there are also studies that have shown that the performance of interactive investigations with families can meet resistance of the professionals (de Kam et al., 2020; Fortin et al., 2021). The involvement requires careful professional respect for both the patient and involved staff and awareness of the psychological impact the analysis can have on all involved. Healthcare managers and investigation leaders, in particular, have a significant role in influencing the culture of this issue.

**Focus on factors of significance, learning and improvement**

Integration and analysis of factors we know have influences on suicidality (e.g., mental illness, treatment, psychosocial context) into the investigations should improve the possibilities to understand the essentials of the underlying individual process of suicidal behaviour. Furthermore, analysis of performed and/or possible suicide reducing interventions is crucial in the analysis of risk management over time and raises the possibility of finding improvement in work with suicide prevention and patient safety. To manage these analyses, a longer timeframe must be included in the investigation. The informants in study IV suggested that the analysis should start from the start of suicide ideation. This seems reasonable in relation to the ITA theories for suicidal behaviour.

If the investigations are to improve safety, the analyses should consider factors important for patient safety such as safety culture, safe procedures, continuity in staffing, staff experience, and competence development. At the systems level these strategies should aim to improve communication at all levels, improve professionals’ knowledge of conditions with enhanced risk for suicidality and appropriate treatment, and improve staff training in direct patient care and communication skills. As suicide as incidents of patient harm occur as a consequence of interactions of different factors of the patient, healthcare provider, and system, safety-enhancing and error-reduction strategies may target any one of these components, but must also consider
interactions between them which usually involve actions at the organisational meso level.

Learning from the performance of daily work and from all that goes well, successes, and recoveries, as well as from failures and close calls, in accordance to the safety-II theory, should bring new valuable perspectives into the care of suicidal patients. Possibilities could be paying attention to episodes of successful recoveries from acute suicide crises or suicide attempts. This can have implications for the understanding of individual recovery strategies and how healthcare management can cope with individual needs. Analysis of periods of stability can identify individual adaptive strategies and knowledge of factors significant for the preservation of health and wellbeing.

**Professionalization of the investigations**

The analysis leaders should be external and independent of the units involved, highlighted by both professionals and the persons with own experience in study IV. Local investigators are part of the local culture at the unit, which may lead to compromises in the depth and accuracy of the analysis with a focus on what is seen as possible rather than what is needed to improve safety.

The quality of the analyses in study I and II varied. Wide differences in experience and competence within investigation teams, leading to variations in performance and approaches to investigations have been pointed out in previous studies (Macrae, 2016; Nicolini et al., 2011a; Peerally et al., 2017; Wu et al., 2008). Education in patient safety and incident analysis for the analysis leaders should ensure quality, and to build up and maintain expertise fewer analysis leaders should conduct more investigations.

Furthermore, not all analyses were performed by a multidisciplinary team. Patients who take their lives are often in contact with multiple services. To understand these different areas and enable analyses covering all adequate aspects of care, specific expertise in suicidology and broad competence in healthcare services are needed in the analysis team. Multidisciplinary teams, including knowledge of the local conditions and policies, are also necessary to manage the careful and inter-professional considerations of care at all levels that are needed to find meaningful actions to improve care.
6.2.1. Summarized reflections on investigation performance

The aim with investigations of suicide is two-fold: 1) To increase the learning and understanding for next-of-kin and involved professionals, and 2) To increase learning in the healthcare organisation and improve the care of suicidal patients and patient safety. To achieve these aims, all investigations need to cover some basic aspects. These includes a description of the course of the event, the variables that influenced the course and outcome, if other actions could have given another (better) outcome, and what lessons can be learned to improve the care of suicidal patients. Another aspect is how the investigations and outcomes are implemented and used in practise, which is necessary to improve the healthcare.

Most investigations of patient harm in Sweden follow the basic formal content in the internal investigations required by the supervisory authority in cases reported as severe patient harm, regulated by the Swedish Patient Safety Act and regulations. These are general and the same for all kinds of patient harm. In our studies, we found that the providers’ adaptations of the investigations to the requirements from the supervisory authority resulted in a similarity in investigation outcomes over the years. Even if the regulation states that the analysis should be adapted to the specific incident, this adaptation was not requested in the supervision.

Managing this adaptation requires knowledge in patient safety and in the specific area that the incident concerns, hence resulting in higher demands on the investigators and the supervision performed by the supervisory authority. What factors that are essential to analyse to understand the course of an incident varies depending on the type of incident and current circumstances. Learning must also take place from what worked well in healthcare and periods of health and recoveries from diseases and suicidality. Guidelines for how investigation of different types of incidents should be performed could be helpful. The prototype framework presented in table 2 (pp.63-65) is one example.

To achieve the second aim, more thorough analyses are needed along with sharing of learned lessons in and between the organisations. The law must support the exchange of information across organizational boundaries, which in many cases is needed to enable analysis of relevant factors for a patient
harm spanning over a long time course and across organisational boundaries. This could include involvement of different healthcare providers, municipalities, and authorities to capture the overall perspective in the investigations and enable effective and coordinated actions for improvement at the meso and macro level. This kind of cooperation in the investigation process needs the support of a just safety culture. Involving professionals, clinicians, and leaders in the analysis could increase commitment and improve the safety culture.

The resources to invest in investigations of patient harm in healthcare are limited and the scope of the investigation should be set in relation to the expected learning. In many suicide cases, mapping the course over time and analysis of contributory causes to the process along with what went well together with involved professionals, next-of-kin, and selected others, should be enough to achieve the aim to enhance understanding and learning at micro level. To advance to organisational learning and healthcare improvement at meso, and possibly macro, level the investigations must involve a wider system, which require knowledge and understanding of the interdependencies of different stakeholders.

**Assessment of the quality of the investigations**

To optimize the benefits of the investigations, efforts must be made to ensure investigations of high quality in performance and outcome. In study III, we identified deficiencies described in literature regarding current approaches to investigations of suicide as an incident of patient harm, and changes in the performance to address these problems. In study IV, we explored the requirements for the investigations to be valuable from the perspectives of persons with lived experience of suicidality and professionals. These findings can be rephrased and merged into quality markers of investigations of suicide, presented in table 4.
Table 4. Quality markers for investigations of suicide as patient harm

<table>
<thead>
<tr>
<th>Quality markers</th>
<th>Fulfilled</th>
<th>Partly fulfilled</th>
<th>Not fulfilled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The analysis was performed by an external investigator leader with expertise in incident analysis and healthcare</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The analysis was performed in cooperation with a multidisciplinary analysis team with expertise in suicidology and broad competences in healthcare</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Next-of-kin was involved in the analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. All current healthcare providers and other relevant stakeholders were involved in the analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Efforts were made to understand the perspective of the patient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Variables of significance for suicide behaviour, prevention and safety were analysed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. The analysed time period was long enough to understand the course of the suicide behaviour and disorder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Recoveries and periods of stability were analysed and factors that promoted well-being and reduced the risk of suicide were identified</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interdependencies and interplay of the micro-meso-macro levels

What the patients experience in their contacts with healthcare professionals, safe healthcare or potential patient harm, is the amalgam of the complex interplay of factors and decisions at different organisational levels. These include personal skills and knowledge, current resources and workload, local procedures, safety culture, healthcare providers organisations, finance directives, regulations and instructions from authorities, and laws. These, in turn, are influenced by public opinions, political climate, financial conditions, judgements, and culture (Rasmussen, 1997). The prerequisites are changing, at the micro level sometimes from minute to minute, and the interplays
between the levels follow. The interplays of the different levels are not linear; the same stakeholder can contribute at several levels.

The factors of importance for safe healthcare of suicidal patients presented in the framework for risk management in table 3 (pp.97-99) are manifested at micro-level. However, these manifestations reflect decisions, financial priorities, culture, and regulations at meso and macro level. Understanding of these interdependencies is needed to perform investigations that include the complexity of the suicidal process and the interplay with healthcare and other stakeholders, that are important to identify vulnerabilities in the healthcare and to find actions valuable to increase patient safety. Hence, to improve safety based on learnings from suicide investigations, organisational legitimacy and effective leadership with leaders engaged in patient safety and quality, and understanding of the interplay and interdependencies of actions at micro, meso, and macro levels are required.

6.3. Strengths and limitations of the studies

The studies included in this thesis have several strengths and limitations that need to be considered in the interpretation of the results. First, my preunderstanding of the issues explored in the studies are to be considered. I am a consultant psychiatrist and have worked with suicidal patients for two decades. As a chief psychiatrist I was responsible to perform investigations of healthcare after suicides for some years before I became a PhD student. During the last six years, along with my doctoral studies, I have been working as a chief medical officer/patient safety leader, concerning patient safety issues, assessment of incidents of patient harm, and investigations. Thereby, I have both practical and theoretical knowledge of the subjects. This provided great advantages in the understanding of the study results, but also a risk for confirmation bias. To handle this, the planning of the studies were performed together with the co-authors and the research process was iterative and transparent for all co-authors.

The different backgrounds of the co-authors strengthened the quality of studies. Boel Andersson Gäre is a professor and a senior consultant in paediatrics. Her research field is in improvement science, including coproduction and patient safety in health and welfare. Axel Ros is a consultant
surgeon and chief medical officer/senior patient safety leader. He is an associate professor and his research focus is patient safety in different clinical settings. Åsa Westrin is a professor and a senior consultant in psychiatry. Her research is within the field of suicidology and includes psychosocial and biological vulnerability, treatment and suicide prevention. For study III and IV, we also had the privilege to cooperate with professor Charles Vincent in the UK. His research concerns patient safety and the management of risk in different healthcare settings. His international experiences in the research fields entailed valuable contributions and broader international perspectives.

**Study I and II**

Data was based on the healthcare providers’ investigations and reports to the supervisory authority, a subset of the total deaths by suicide, and thereby excluding suicides not reported to the authority. The reviewed suicide cases, with the exception of cohort 3, were reported in the period when it was mandatory for the healthcare providers to report all suicide cases when the person was, or had been, in contact with any healthcare four weeks before death, regardless if the suicide was assessed to be patient harm or not. Hence, the suicide cases reported to the supervisory authority in our studies were reported either as assessed as incidents of severe patient harm, or in accordance to the regulation of mandatory reporting of all suicides occurring within four weeks after any contact with healthcare. During the years of mandatory reporting, around half of all suicides in Sweden were reported to the authority (Health and Social Care Inspectorate, 2022a). In cohort 3, only cases regarded as severe patient harm (avoidable) were to be reported.

The content in the reports is formalized and regulated by law, the same for all kinds of incidents of patient harm, with mandatory descriptions of contributory causes to the incident and planned actions to prevent similar incidents from happening again, but the methodology for the investigations is not. Hence, the quality of analysis differed; the investigations were performed in different contexts by different persons with a large spectrum of disparities in experiences resulting in variegated quality. Only deficiencies and actions reported by the providers were categorised in the studies. Hence, there still may have been additional shortcomings and inadequacies in healthcare preceding the suicide that were not mentioned in the reports or observed by the authority. The shortcomings in the current approach to the investigations
found in study III cast further doubts on the findings to mirror the real circumstances of the suicide incidents and contributory factors.

As there is no national taxonomy for the categorization of deficiencies and actions, the coding scheme used in the reviews was created by the authors, in line with the idea of pragmatism. The scheme was based on the general categories of the most widespread method of investigating adverse events in Swedish healthcare [Händelseanalys], which is based on RCA (Swedish association of local authorities and regions, 2015). To make the categorization more specific, four of the major categories were divided into additional subcategories and a category of “others” was added in case none of the other categories was considered appropriate. The category of “others” was used only in a few cases, suggesting that the categories in the coding scheme covered most of the reported deficiencies and actions.

All data collection and categorization were conducted by me, which made the categorization vulnerable to bias, but ensured a high level of consistency. The analysis was performed in a relatively short time period which enabled to maintain a persisting overview, facilitating the comparison between the cohorts. To assess the reliability of the coding scheme, a small random sample of the investigations was independently reviewed by one of the co-authors (AR), and the results were compared with my coding. Categorization and coding of the organizational levels were consistent in all cases. To assess the consistency of the coding over time, ten cases were re-coded some months after the first coding. Coding fell out consistent. We judged the consistency in the coding in this studies to be adequate in relation to the study aims.

If I was to make the studies today, I would have complemented the data collection with using the quality markers of the investigations that I suggested in table 4 (p.109).

*Study III*

The literature specific to investigations of suicide as incidents of patient harm is sparse and randomized controlled trials are not available, which makes it difficult to undertake a systematic review of relevance. In this situation, a scoping review was regarded useful to meet the study aim, because all relevant literature regardless of study design can be incorporated and the process is
iterative. Scoping reviews aim to provide a map or a snapshot of the existing literature in a specified area, without the intention to assess the quality of the literature or providing an extensive data synthesis, and thereby scoping reviews differ from systematic reviews (Armstrong et al., 2011; Brien et al., 2010). The methodology is in line with the philosophical underpinnings of pragmatism, that may be particularly relevant to disciplines with emerging evidence (Ansell & Geyer, 2017). In our study, the methodological framework of scoping reviews described by Arksey and O’Malley was used (Arksey & O’Malley, 2005). The identification of studies and study selection were performed by me and validated by the senior researchers in the research group.

The combination of clinical and academic experiences in suicidology, patient safety and healthcare improvement in the research team served as strengths in this study, facilitating the evaluation and application of the literature. However, the researchers’ preunderstanding and experience in the research field, were also identified as risks for unintentional reviewer and confirmation bias in the selection of literature. The authors’ different backgrounds and experiences served to improve balance. Owing to a lack of common nomenclature in the relevant science fields, there was a risk that studies of relevance might have been missed in the literature search. To address these limitations, the search strategy was developed in consultation with a professional university librarian. Furthermore, this study did not include systematic searches of gray literature. To the best of our knowledge, all included studies were applicable and significant for the investigation of suicide cases. However, the study aimed to review investigations of suicide as incidents of patient harm, not representing suicides in the general population.

Study IV

This study was a qualitative semi-structured interview study. The choice of data analysis approach fell on thematic analysis, systematic text condensation (STC) as described by Malterud. STC is a descriptive and explorative method for thematic cross-case analysis of different types of qualitative data, suited for interview studies. The method represents a pragmatic approach, although elaborated from phenomenological principles of Giorgi (Giorgi, 1985, 2009). STC was developed to offer even novice researchers a process of inter-subjectivity, reflexivity, and feasibility while maintaining a responsible level
of methodological quality (Malterud, 2002), and thereby regarded as a convenient choice to use in this study. The detailed prescriptions of principles and procedures support transparency and inter-subjectivity by being easily conducted and presented (Malterud, 2012). The role of theoretical frames of reference for analysis in STC is not explicated, but allowed to be applied in different ways.

In our study, 15 individuals were interviewed, selected by purpose. Five were persons with own lived experience of suicidality or was a close relative to a person who died by suicide, recruited through a voluntary organisation for suicide prevention. This might have had an impact on the results in the way that all were strikingly engaged in the discussed issues and eager to share their experiences. However, we regarded it to be valuable with responders that had been thinking of the complexity of these issues before the interview to reach the aim for this study. The group of professionals consisted of three groups; suicide researchers, patient safety leaders, and officials at the supervisory authorities, all with long experiences of working in Swedish healthcare and in analysis of suicide cases. Some of the responders were also working as clinicians within psychiatric healthcare. The different professions provided broad perspectives into the interviews.

The concept of saturation, achieved when further empirical data add nothing more compared with previous data, is problematic in a pragmatic view (Ansell & Geyer, 2017). In the pragmatic approach, saturation is a logical fallacy, as new theoretic insights will emerge as long as data continue to be collected. Following this, there is no didactic guidance on how the researchers can determine the point of saturation. Altogether, we regarded the number and distribution of responders to be adequate to fulfil the purpose of this study and to answer the research questions, but we realise that other opinions and perspectives, which may not recognized in this study, are possible.

The limited sample size in our study enabled us to maintain a persisting overview of the whole data set along with the individual interviews during all steps of the analysis, also counteracting the risks of fragmentation of data. The findings were re-contextualized, and validated against the initial complete transcripts, in the final step of the analysis to ensure consistency.
The responders read the prototype framework before the interview, which might have led to anchoring bias to the questions in the interview guide. In hindsight, and with the possibility of having two meetings at different time points with the responders, separate interviews for the framework and the interview guide could have been planned, and the interview guide used first. However, reading the framework before the interview could also facilitate the preparations for the interview and should not have hindered further suggestions.

**Pragmatism**

The choice of pragmatism as the epistemological research perspective suited my approach to the research well. Suicidology and patient safety are both complex fields of science. The pragmatic approach was helpful to focus on the essentials in my studies and to be concrete, easy to understand, and result in something useful in practice.

I started with a practical problem, frustrated by the investigations that I found were not very helpful. In a pragmatic approach, I considered what I needed to know to progress and how I could get there. The first two studies were the base for the design of study III, which resulted in the model for investigation of suicides as patient harm. Following this, we designed study IV.

### 6.4. Conclusions

The majority of suicides reported as incidents of patient harm were reported by a psychiatry healthcare provider. Demographically, these cases were representative compared to the suicide cases in the entire population. Most suicides occurred shortly after the last contact with healthcare and during outpatient care.

As incidents of patient harm, suicides differ from most other kinds of reported patient harm in some ways. Only a small proportion occurs in hospitals, most occur in the home of the patient without any witnesses or staff around. Suicide is an act performed by the patient himself/herself and is usually the final outcome of the complex interplay of several different variables with different impacts in different contexts, varying over time and between individuals.
The adaptation of the investigations to the requirements of the supervisory authority has contributed to the fact that the learning from the healthcare’s investigations of suicide has levelled off, the same shortcomings and actions were reported over time. The investigations were performed with a strict healthcare provider perspective, with focus on the last contact with the patient, routines, and what went wrong. This resulted in suggested measures for improvement at an organizational micro level without organizational sustainability over time and with a risk to not address organizational system deficiencies.

The investigations of suicide as potential patient harm should integrate current knowledge in suicidology and patient safety to enable learning and insights valuable for healthcare improvement. This include a holistic perspective of the patient’s situation, analysis of a longer time period and factors of importance for suicidality, suicide prevention, and patient safety, professionalization of the investigations, analyses across organizational boundaries, and focus on learning. A framework to guide this analysis is suggested in this thesis.

The development of knowledge in the science fields of patient safety and suicidology imply the need for a cultural shift in the understanding of suicide as an incident of patient harm. Instead of making a difficult and often to some extent speculative assessment if a suicide could have been prevented if other actions had been performed in the contacts with healthcare, and therefore should be investigated and reported as a severe patient harm, or not, the focus in the analyses should be on risk management over time. I propose a framework with factors of importance for a safe healthcare at suicidality to guide this analysis.

6.5. Implications

Clinical implications in the work with suicidal patients

Assessment of suicidality for prevention and risk management over time. Increased knowledge and understanding of factors influencing suicidality over time imply a shift in the use of suicide risk assessment, from a tool for
prediction to prevention, to identify patients with suicidality and to plan interventions aiming to reduce suicidality.

The patient and next-of-kin must be actively involved in assessment, planning, implementation and follow-up of treatment and efforts to reduce suicidality.

Attention during care transitions and close follow-up. Suicidal patients should be followed closely by healthcare for the opportunities to detect deterioration early and enable symptom-reducing treatments and interventions.

Investigations of suicide

Focus on risk management and learning instead of avoidability. The assessment of the avoidability of suicide is often difficult and to some extent speculative and limits the opportunities for learning and dissemination of knowledge. Therefore, a cultural change is needed in the assessment of suicide as a patient harm with focus on risk management over time. I propose a framework to guide this assessment.

Trained external analysis leaders and multidisciplinary analysis teams. External investigators trained in investigative methodology and patient safety who conduct many investigations should increase the quality of the internal investigations of suicide. The investigations must be performed with the support of a multidisciplinary analysis team including specific competence in suicidology. Guidelines for what should be included in the analysis should be available as support. We propose a protocol that can be used, and quality markers for the assessment of the quality of the investigations.

The patient’s perspective and suicidality. How the care managed to meet the patient’s needs should be analysed to understand how factors of importance for the patient’s well-being and suicidality were handled by the healthcare over time. Next-of-kin, current caregivers and other people who knew the patient need to be involved in the investigation to understand the whole.

A National Quality Registry of suicides to increase knowledge about suicide and to improve suicide prevention

Data for all suicides and investigation results should be collected in a national quality registry. Aggregation of data should create a broad basis for analysis,
increased knowledge about suicide and possibilities to find deficiencies at meso and macro level and effective improvement measures that can be introduced at the national level.

**Application of the Patient Safety Act and regulations for the investigations of severe patient harm**

The Patient Safety Act and associated regulations form a prominent part of the framework for the work with patient safety in healthcare and for the supervisory authority. Patient safety is a relatively young and expanding field of knowledge and the current law is based on the knowledge that existed when the law was established just over a decade ago. This thesis shows that if the Patient Safety Act is to contribute to improve the work with patient safety in healthcare, applications of the laws and regulations need revision and adaptation to the new knowledge in the area. Examples are briefly described below.

*Adaptation to the specific nature of incident.* The extent and what factors that are essential to analyse to understand the course of an incident varies depending on the type of incident. These assessments require knowledge in patient safety and in the specific area that the incident concerns, hence resulting in higher demands on the investigators and the supervisory authority. Guidelines for how investigations of different types of incidents should be performed are needed.

*A broader organizational system perspective.* The law must support information sharing across organizational boundaries (different healthcare providers, municipalities and authorities) that may be needed to understand the overall perspective in the investigations and enable effective and coordinated actions for improvement at the micro, meso, and macro level.

*The experiences of the patient and/or next-of-kin are to be integrated parts in the analysis of the incident.* Proposals for improvement and identified deficiencies must be integrated in the investigation, not only mentioned in the end or attached as an appendix.

*Lessons learned from what worked well in healthcare.* Learning must also take place from what worked well in healthcare and periods of health and recoveries from diseases and suicidality.
Sharing of learning from internal investigations of patient harm needs to be organized and available at regional and national level.

Changes in the approaches of supervision of healthcare

New knowledge in patient safety implicates a shift from a focus on patient harm and errors to quality and the positive outcomes of healthcare, risk management, proactive patient safety work, patient safety culture, and commitment of management’s. Examples could be follow-up of improvements in healthcare, qualitative reviews of the providers’ investigations, how healthcare works and what adaptations take place in the event of unforeseen events or high workload (resilience), and implementation of proactive working methods to strengthen the patient safety work close to the patient.

6.5.1. Future research

Research on current and new methods for investigations of patient harm is needed to progress in learning and improving patient safety. The suggested model for investigation of suicides in this thesis is to be tested and evaluated in clinical practice. The model should also be tested if useful pro-actively in the planning of care after suicide attempts.

The framework for assessment of risk management in the care of suicidal patients proposed in the discussion section needs to be tested and evaluated in clinical practice. If this turns out well, the framework should be adjusted and evaluated for the assessment of other kinds of patient harm.

A National Quality Registry of suicide and investigations of suicide should enable research on suicides related to healthcare, but also suicides in the entire population. Aggregation of the results in internal investigations should enable a good basis for identification of possible systemic vulnerabilities and actions for improvement. The analyses should also involve what was good and helpful in healthcare.
Co-production and co-design: Using patient experiences as a source of knowledge about work-as-done is required to enhance knowledge of what is helpful in care.

We also need to know more about implementation of actions to improve patient safety and how to receive a sustainable organizational memory.


Results and Lack of Improvement over Time. *PLoS One, 11*(6), e0156322.


Socialstyrelsens föreskrifter och allmänna råd om vårdgivares systematiska patientsäkerhetsarbete (HSLF-FS 2017:40) [National Board of Health and Welfare's instructions and recommendations for healthcare providers systematic work with patient safety], (2017).


Swedish Association of Local Authorities and Regions. (2021). *Utredning av allvarliga vårdskador [Investigation of severe patient harm].*


The Swedish National Audit Office. (2021). *Statens suicidpreventiva arbete - samverkan med andra?* [The state's suicide prevention work - cooperation with others?].


von Goethe. (1774). *The Sorrows of Young Werther*


Patient safety and suicide
– learning in theory and practice from investigations of suicide as patient harm

The overall aim of this thesis was to increase the knowledge and understanding of suicide as an incident of patient harm, and to find possibilities of changes in the approach to suicide investigations which could contribute to increased learning and improve suicide prevention in healthcare.

Four studies were performed to explore the complexity in different perspectives: study I and II were reviews of suicide investigations of suicide cases reported to the supervisory authority as patient harm. Study III was a scoping narrative literature review of the problems with the current approaches to investigations of suicide as patient harm and possible changes for improvement. Study IV was an interview study in which the requirements for valuable investigations of suicide from the views of persons with lived experience of suicidality and professionals were explored. All studies were performed in a Swedish context.

As incidents of patient harm, suicides differ from most other kinds of reported patient harm in some ways. Only a small proportion occurs in hospitals, most occur in the home of the patient without any witnesses or staff around. Suicide is an act performed by the patient himself/herself and is usually the final outcome of the complex interplay of several different variables with different impacts in different contexts, varying over time and between individuals.

The investigations of suicide as potential patient harm should integrate current knowledge in suicidology and patient safety to enable learning and insights valuable for healthcare improvement. The development of knowledge in the science fields of patient safety and suicidology imply the need for a cultural shift in the understanding of suicide as an incident of patient harm. Instead of making a difficult and often to some extent speculative assessment if a suicide had been prevented if other actions had been performed in the contacts with healthcare, and therefore should be investigated and reported as a severe patient harm, or not, the focus in the analyses should be on risk management over time.

ELIN FRÖDING is a consultant psychiatrist and chief medical officer/patient safety leader in Region Jönköping County. Her dissertation contributes to increased knowledge and understanding of suicide as incidents of patient harm, proposes new directions for investigations of suicide, and suggests assessment of risk management over time to improve patient safety.