The Dutch Armed Forces marked soldier enhancement as a priority technological area for the first time in 2018. Parliament subsequently agreed to a judicial-ethical framework for guiding the armed forces' research, development, and implementation activities in soldier enhancement. Reporting on the initial research efforts to establish such a framework, this study was conducted by the Netherlands Defence Academy's Faculty of Military Science in partnership with The Dutch Military Healthcare Organization. It focuses on the views of military physicians, for they are the ones, especially during operational practice, who are supposed to both help decide and apply many soldier enhancements. As research on the ethics of soldier enhancement is mostly theoretical, our qualitative study aimed to gain insight into the actual moral issues that military physicians encounter, or expect to encounter. The study involved twenty-eight Dutch military physicians in operational roles, divided into six focus groups. Our findings illustrate that the uncertainties involved in soldier enhancement, and the potentially high stakes in military operations, can make it hard for military physicians to adhere, in an absolute sense, to bioethical principles such as doing no harm and preserving bodily integrity. Central in our study though, is the relational context in which military physicians are situated in this practice, as this is what apparently causes them to experience and sometimes struggle with divergent moral issues and responsibilities in soldier enhancement.

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Moral issues in soldier enhancement | Gwendolyn Bakx Carlijn Damsté Sanne de Bruijn Eva van Baarle

121 Research Paper

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Contents

Abbreviations

FG	Focus Group(s)
IHL	International Humanitarian Law
M	Moderator
MCD	Moral Case Deliberation
PTSD	Post-Traumatic Stress Disorder
P	Participant

About the authors

Gwendolyn Bakx is Associate Professor in Human Factors and System Safety at the Netherlands Defence Academy's Faculty of Military Science. She has served actively in the Royal Netherlands Air Force in several roles for 26 years. Her research focuses on work and work systems in the context of system safety in and of complex socio-technical systems.

Carlijn Damsté has a BSc and MSc in biomedical sciences, and a MA in applied ethics. She took part in this research during her internship at the Netherlands Defence Academy's Faculty of Military Science.

Sanne de Bruijn, public health physician, has been working as an MD in the Royal Netherlands Air Force for 10 years. Her current rank is major and her role is medical advisor at the Royal Netherlands Air Force Center for Man in Aviation.

Eva van Baarle is an Assistant Professor in military ethics and philosophy at the Netherlands Defence Academy's Faculty of Military Science. Her research focuses on fostering reflective practice and moral competence by means of ethics education and training.

Summary

The Dutch Defence and Industry Strategy included soldier enhancement as a priority technological area for the first time in 2018. Parliament subsequently adopted a motion asking the government to develop a judicial-ethical framework for guiding the Dutch armed forces' research, development, and implementation activities in the area of soldier enhancement. Our study, which is conducted by the Faculty of Military Sciences at the Netherlands Defence Academy in partnership with the Dutch Military Healthcare Organization, reports in this context on initial research efforts on ethics in soldier enhancement. It focuses on the viewpoints of military physicians in operational roles because we believe that research on any ethical framework should start with exploring the work of those who are involved in the actual practice. Many physical and mental enhancements are applied to soldiers' bodies. It is therefore expected that military physicians will be among the ones, especially during operational practice, who not only help decide on soldier enhancements, but also apply many of them.

As research on the ethics of soldier enhancement is mostly theoretical, this study explicitly focused on the experiences and perspectives of practicing military physicians. To that end, we carried out an empirically directed, bottom-up, qualitative and explorative study involving six focus groups of Dutch military physicians (n=28) in operational roles. During the focus group discussions, the participants were asked to voice their thoughts, experiences, and any concerns about moral issues regarding soldier enhancement. The research aims to improve our understanding of the moral issues involved in soldier enhancement, by studying military physicians' perspectives on what they consider the actual moral issues at stake for them in this practice. Using inductive thematic analysis, we established six main themes from the focus groups: 1) Uncertainty and high stakes; 2) Dependency relationships and conflicting moral responsibilities; 3) Struggling with values; 4) Dual loyalty dilemmas; 5) Risks of ethical slippery slopes; 6) Considerations for ethics support.

Our findings illustrate that dealing with soldier enhancement can be challenging for military physicians. Foremost are the contextual difficulties with soldier enhancement, such as the inherent uncertainties, and the potentially high stakes involved in military operations, which can make it hard for military physicians to adhere to in an absolute sense, for instance, the bioethical principles of doing no harm and the preservation of bodily integrity. Central to our findings though, was this complicating factor specifically: the relational aspect of soldier enhancement, and how as a consequence, military physicians tend to experience multiple and divergent moral issues, responsibilities, and obligations. Military physicians dealing with soldier enhancement find themselves placed in a complex web of dependency and power relations with military commanders and others, whose values and interests all

have to be balanced somehow. They need to remain effective in this setting, both as unit physicians as well as in multiple related roles, which indeed requires considerable skill and acuity.

Current debates on the ethics of soldier enhancement appear to be dominated by abstract and theoretical, mostly principlist, deontological, and utilitarian perspectives that are part of traditional normative ethics. In their practice, however, professionals tend to experience ethical conflicts when combining this principle-based professional reasoning and relation-oriented reflections. Our focus group participants reported similar struggles. Their perspectives and experiences regarding soldier enhancement, whereby the contextual and relational aspects of the actual practice were emphasized so often, seemed much more like a care ethical approach, which is fundamentally relational-oriented. "Responsibility for others" is the moral presupposition in care ethics. A care ethical approach contributes as such to the acknowledgment of relational and other contextual aspects of moral complexities. Ethics support tools that fit this perspective include dialogical instruments for facilitating guided or non-guided moral discussions among professionals, such as peer consultation and joint reflective dialogue on moral issues.

The participants' views on an ethical framework for soldier enhancement reflected this duality. On the one hand they called for prescriptive and formalist guidelines, rules, and regulations; on the other hand, they expressed a need for ethics support based on dialogue and deliberation. Dialogue-oriented ethics support is well established in civilian healthcare settings. Further research is needed on these forms of ethics support, including: how to effectively support military physicians combining principle-based reasoning and relational-oriented ethics, which dialogical ethics support tool(s) best fit the military physicians' specific soldier enhancement context, the conditions required (e.g. should it include moral training), how to combine traditional normative and dialogical approaches and instruments in such an ethics support system, and how to effectively integrate and facilitate discussions on normative frameworks in dialogical ethics support tools. We also recommend further study that includes other disciplines' perspectives and experiences to explore what ethics support systems for soldier enhancement should look like.

Chapter 1

Introduction

Throughout history, vital aspects of warfare have been to improve soldiers' abilities in combat, and increase their survivability. These can be achieved through natural means, such as conventional physical training or personal adjusted diets (Black, 2013). Technology such as exoskeletons can also be used to effectively increase soldiers' strength and endurance, and to protect them from strain injuries (Husseini, 2020). Other examples of technical soldier enhancement applications include the use of augmented reality, and prescription drugs. Modafinil, for instance, can be prescribed to counter exhaustion. Methods involving genetic modifications, the integration of chips in brains, and transcranial electric stimulation to enhance a soldier's responsiveness are currently under investigation (Eagan, 2020; Stevens & Gilbert, 2020).

With the rising complexity of modern warfare, the number of technological artifacts that enhance human combatants has increased in complexity, but also in type and scale, along with the impact these artifacts seem to have on the fundamental role of human combatants in warfare (Billing et al., 2020). Soldier enhancement can be defined as enhancing soldiers who have "a statistically relevant likelihood of increasing the probability of accomplishing the stated military objective through biological, medical, or technological change to a soldier's physical, metabolic, mental, emotional, or moral baseline (or current capability)" (Davidovic & Crowell 2021, p. 181). In this sense, the biomedical enhancement literature explicitly distinguishes between treatments and enhancements, whereby enhancements are supposed to boost one's capabilities beyond the species-typical level or statistically-normal range of functioning for an individual (Daniels, 2000).

The Dutch Defence and Industry Strategy first listed soldier enhancement as a priority technological area in 2018, together with other technologies such as quantum sensors, directed-energy weapons, and developments in satellites and space. Parliament subsequently adopted a motion (Bruins Slot et al., 2019) requesting the government, due to the severe potential consequences of enhancements, to develop a judicial-ethical framework that could guide the Dutch armed forces' research, development, and implementation activities in the area of soldier enhancement. The Ministry of Defence's response was to base the efforts on soldier enhancement, at least initially, on the guidelines and regulations that already existed in the relevant civilian domain. The Military Healthcare Organization nevertheless decided to explore the possibilities for a military framework specifically. This study, which the Netherlands Defence Academy's Faculty of Military Science conducted in partnership with The Dutch Military Healthcare Organization, reports on these initial research efforts.

This research focuses on military physicians' views. This is because we believe that research on any ethical framework should start with exploring the work of those who are involved in the actual practice. Many physical and mental enhancements, especially those applied to a soldier's body, are biomedical, that is to say are medicine based. With their knowledge of the associated risks, physicians can thus be said to hold the key to these enhancements (Delaney & Martin, 2011). Some medical applications, furthermore, need medical supervision. It is therefore expected that these physicians will be the ones, especially during military operations, who help decide on soldier enhancements, and apply many of them. As they are expected to deal not just with the physical aspects of soldier enhancement, but also with a range of moral issues, studying this particular group of actors' viewpoints is highly relevant when seeking an ethical framework for soldier enhancement.

Moral issues that military medical healthcare professionals have to deal with in their work are generally discussed in the military medical ethics literature (Messelken & Winkler, 2020; Messelken, 2020). A typical example concerns the moral obligations imposed on these professionals by International Humanitarian Law (IHL), that is to say the laws of armed conflict, in order to be allowed conditional protection under this particular law (Messelken, 2019; Bricknell & MIron, 2021). The literature also highlights how issues from the general human enhancement literature, such as those derived from treatment-enhancement distinction (Erler, 2017; Daniels, 2000), bodily integrity (Ruggiu, 2018; Roosendaal, 2012), and human dignity (Kirchhoffer, 2017), might typically work out in military settings. Examples include discussions on super soldiers (Caron, 2018), and the dual loyalty dilemma (Benatar & Upshur, 2008). Physicians are in general trained to focus their care – primarily – on the individual patient (Schwenk, 2020). A dual loyalty dilemma can arise in instances when medical experts experience explicit obligations to a third party, as a result of which their loyalty is "deflected from a patient toward [that] third party" (Benatar & Upshur, 2008). This can be the case where medical experts work for an insurance company, if they have to report to a prison commander, or, like in this study, if they work for the military.

1.1. Research aim

Most research on the ethics of enhancements is theoretical. Not much is known about actively practicing physicians' actual experiences, views, and attitudes regarding enhancements (Hotze et al., 2012). Our aim in this study on soldier enhancement is therefore to specifically identify practicing military physicians' perspectives on what they regard as the actual moral issues at stake for them in soldier enhancement. By applying a bottom-up approach, we aim to improve our understanding of the moral issues involved in this military-specific domain of enhancement, which we consider a first and major step when planning to build an ethical framework for use in practice.

1.2. Theoretical and empirical relevance

This study makes a two-fold contribution to the literature. First, the study presents actively practicing military physicians' perspectives on moral issues and values at stake when practicing soldier enhancement. Second, our findings show the relevance of acknowledging the situated complexities for military physicians involved in soldier enhancement practices, and how complex power and dependency relationships in this can generate multiple moral responsibilities for them. This in contrast with the existing literature on soldier enhancement, which tends to be rooted in deontological and consequentialist perspectives regarding the ethics of soldier enhancement.

Ethical frameworks for soldier enhancement are likewise generally created from deontological and consequentialist perspectives, often resulting in frameworks that centre on ethical principles. The insights from this study regarding relational and other contextual soldier enhancement issues especially therefore provide researchers and others working on similar frameworks, with an additional and above all complementary perspective on how to build such a framework.

According to our participants, the relational and other contextual complexity in which military physicians are situated when considering soldier enhancement, is not something exclusive to that particular field. Military physicians are constantly confronted with uncertainties in their work, as well as with many different actors they have to relate to in one way or another. The empirical value of addressing these issues therefore lies not so much in pointing out their complexity as some kind of exclusive feature of soldier enhancement for military physicians, but in reflecting on how these more or less known aspects of the medical-military profession usually work out when dealing with actual moral issues in practice. This is important particularly because enhancements can have severe and irreversible consequences for soldiers, both physically and otherwise, and may result in the soldier enhancement practice being regarded as morally demanding for military physicians.

1.3. Background: ethical approaches to soldier enhancement

The field of medical military ethics encompassing soldier enhancement is firmly rooted in traditional normative ethics aiming to sharply distinguish between right and wrong, and prescribe what ought to be done (Lloyd & Hanson, 2003). In traditional normative ethical theories, there are diverse categories of ethical approaches that each bring with them specific perspectives on moral issues. A deontological (or duty) approach, for instance, would impose conditions and moral principles on an activity that should be adhered to, such as that soldier enhancement should only be applied where it serves a legitimate military purpose (Lin et al., 2013, p. 66). Consequentialist or utilitarian approaches, on the other hand, assess the desirability of soldier enhancements by their consequences (Bentham, 1789). A virtue approach to soldier enhancement, in turn, will consider an enhancement virtuous according

to what extent it is expected to create virtuous soldiers, which means soldiers who are able to "cultivate and display moral wisdom in all of their professional and personal roles" (Lin et al., 2014).

A dominant perspective in military medical ethics is the deontological approach, which generally prescribes clinicians to base their ethical considerations on biomedical ethics principles. Most commonly used in this, according to Hain (2020), are the four biomedical principles that were originally proposed by Beauchamp and Childress (2019 [1979]): autonomy, beneficence, non-maleficence, and justice. Because of its dominant position in military medical ethics, it is hardly surprising that deontological approaches also dominate the soldier enhancement literature. Indeed, the literature on soldier enhancement turns out to be mostly duty-based. It mentions numerous conditions and bioethical principles that soldier enhancement should adhere to (Beard et al., 2016; Girling et al., 2017; Messelken, 2019). For instance, apart from the principle that soldier enhancement should have a legitimate military purpose, this literature often states that those who impose enhancements have a duty to do no harm (Gillon, 1994; Saniotis & Kumaratilake, 2020), as well as a duty to respect the soldier's autonomy, and a duty to respect a soldier's right to an informed choice (Latheef & Henschke, 2020). A subset of this literature looks at dual loyalty issues in the military-medical dimension. Discussed extensively in this subset of the literature is that military physicians have taken both the medical and military oath, which raises questions on how they can uphold their duties towards these two disciplines at the same time (Allhoff, 2008; Thomas et al., 2020). Deontological approaches can also be found in the many discussions where soldier enhancement relates to the protective status of military healthcare personnel under IHL (Beard et al. 2016; Girling et al., 2017; Messelken, 2019; Henschke, 2019; Davidovic & Crowell, 2021). From a deontological perspective, soldier enhancement can be considered a means to improve battle power rather than as a medical duty. Especially when medical personnel engage in enhancements that are harmful to the enemy, they might therefore lose, from this perspective, the special protection that they normally enjoy under IHL (Liivoja, 2018).

Consequentialist or utilitarian approaches also feature in the soldier enhancement literature. Švaňa (2017, p. 160), for instance, argues that "the idea of enhancing soldiers is neither inherently wrong nor right (immoral or moral, evil or bad[; it] is the consequences of enhancement that matter the most." Many arguments in the literature follow this line of reasoning, for example that it is justifiable to apply soldier enhancements such as enhanced military decision-making and increased survivability opportunities, on account of the potential benefits (Beard et al., 2016; Bostrom & Roache, 2008). Brought to bear in this regard is the expectation that certain enhancements can reduce the size of military forces required, which would result in a net gain in human lives (Beard et al., 2016; Švaňa, 2017). Deontic requirements, in other words, are balanced in these cases by "the more utilitarian concern regarding how pursuing such enhancements would affect the health and safety not only of

oneself, but others as well" (Pfaff, 2018). A soldier's individual rights, such as respecting the soldiers' freedom and autonomy, often tend to lose out in this perspective when it is compared with the extent to which the enhancement is expected to maximize the overall good. Questions are sometimes raised about these issues from other than consequentialist or utilitarian ethical perspectives, such as whether enhancements should at all be forced upon individual soldiers.

Virtue related approaches are less prominent in the soldier enhancement literature, although questions are raised about whether soldier enhancements have the potential to produce virtuous soldiers, as well as what a virtuous soldier is in the first place (Lin et al., 2014). The applicants' virtues are also mentioned in this literature. What is emphasized, for instance, is to at all times achieve the virtue of good employership (Wolfendale, 2008), the virtue of resilience in soldiers (Howell, 2015), and the virtue of not simply using up soldiers. Some literature, moreover, focuses on the connection between soldier enhancements and generic military core virtues such as loyalty, courage, and safety (Moelker & Olsthoorn, 2007; Olsthoorn, 2007; Enemark, 2014). The fear thereby is that enhancements could potentially undermine these important military values (Beard et al., 2016, p. 13). Warrior identity, after all, is at least partially defined by the narrative tradition of the warrior community, which is strongly based on these particular values. Enhanced soldiers could challenge conventional views of what is a good warrior identity (French & Thomas, 2004).

Chapter 2

Methods

Given the scarcity of empirical research on military physicians' experiences with soldier enhancement, we opted for an inductive, qualitative, and exploratory approach. Our aim in applying this approach was to gain a rich understanding of physicians' actual experiences with and opinions on the ethics of soldier enhancement – also the potential inherent differences – rather than uncover some objective truth, universal laws, or ethical principles regarding soldier enhancement. To that end we set up a bottom-up, practice-oriented, empirical study whereby military physicians in actual operational roles were asked to share their thoughts and experiences on what moral issues, from a practitioner's point of view, they think are at stake when dealing with soldier enhancement.

2.1. Data collection

The research was conducted within the Dutch armed forces. Following the Dutch Association of General Military Physicians' general announcement of the study, military physicians in operational units were invited to participate. Purposive sampling was used to ensure equal participation from the three armed divisions: the Air Force, the Navy and the Army. All the participants received written information about the research project. Their details are presented in table 1.

Table 1 Descriptions of focus group participants

		Participants (n=28)
Gender	Male	11
	Female	17
Armed forces division	Air Force	9
	Navy	10
	Army	9
Work experience	Years	
	2-5	8
	5-8	9
	>8	11
Experience with deployment	Yes	23
	No	5

To obtain the rich data sets required for this research, we organized focus groups because these allow participants to talk in depth and offer opportunities for discussion among peers (Nyumba et al., 2018). A total of six semi-structured focus groups were formed, two per division. Each focus group had four to six participants. From the total of twenty-eight physicians taking part, seventeen were women and

eleven were men. Two researchers (CD and SdB) moderated all the focus groups that were held between April and June 2021.

During the focus group discussions, the physicians were asked about their experiences and their thoughts regarding soldier enhancement, concentrating on moral issues. The main topics discussed centered around the participants' experiences with soldier enhancement, what they regard as important values in soldier enhancement, what they anticipate as moral issues for themselves, and what kind of needs the physicians think should be addressed. All the focus group discussions were audio-recorded, transcribed, and anonymized.

2.2. Data analysis

To analyze the transcripts, we applied Braun's thematic analysis (Braun & Clarke, 2012), by first ascribing initial codes to the data, then interpreting them into themes. We used the qualitative software programme Nvivo 12 to record the codes during the analysis and applied Gioia's data structure methodology (Gioia et al., 2013) to define and refine the themes, see annex. During every step of this process, the varied background of the researchers involved was used to enrich the analysis. All discussion and accompanying decisions were recorded in memos.

The first transcript was coded separately by all four researchers (EvB, CD, SdB, GB). No pre-existing coding framework was used. A collaborative discussion followed the open coding, resulting in a tentative overview of themes such as "not harming the integrity of the body," "necessary deployment of enhancement," and "duality in the military physician's role". The other transcripts were all coded by two researchers, first independently, then discussed critically by both. The composition of these couples varied per focus group, but always included one of the focus group moderators. For the final coding, the tentative overview of themes was further specified in collaborative discussions. Any change at this stage of the analysis was discussed by all members of the research group.

2.3. Research ethics

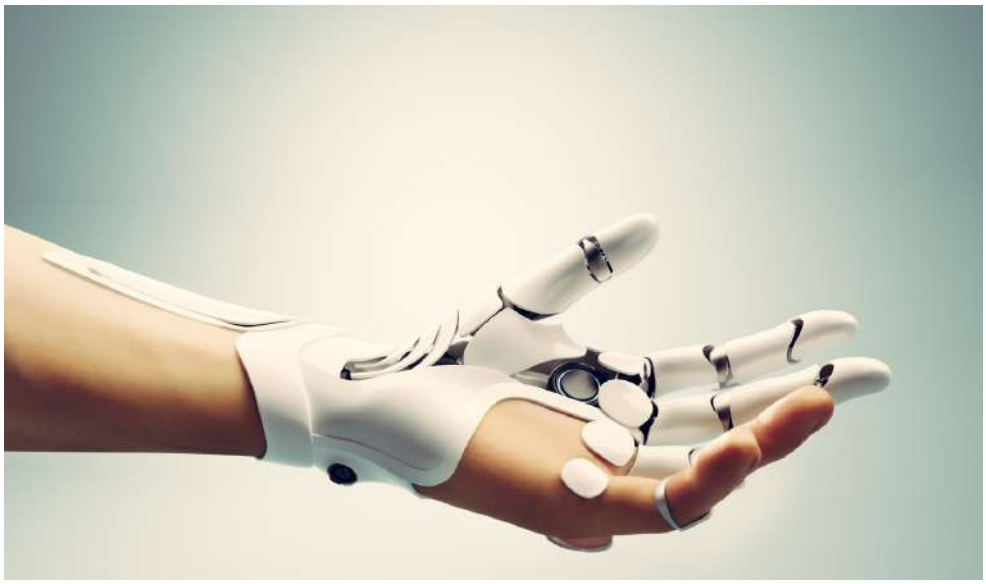
In accordance with the ethical principles for medical research as stated in the Declaration of Helsinki, all the participating military physicians gave their oral and written informed consent after being informed about the purpose of the study, and how the data would be collected, analysed, and stored. Beforehand, we emphasized the voluntary nature of their participation. The physicians were able to stop participating at all times during the study, and to have their data deleted. None of them chose to do so. The need for Medical Research Ethics Committee approval was deemed unnecessary since this study does not fall under the Medical Research involving Human Subjects Act and related

Dutch regulations (www.cmo.nl). The datasets used and analysed during this current study are available from the corresponding author on reasonable request.


Modafinil
Tablets USP
Modalert 200


SINGLE USE ONLY


Suction
Mayo tubes
Intubation
Coniotomie



FINDINGS

(Chapters 3-5)

The participants exchanged their thoughts and experiences during the focus group discussions about what they consider as actual moral issues for them in soldier enhancement. During this exchange, they presented a number of examples of soldier enhancement applications. These ranged from the application of stimulants and downers and other prescriptive drugs (including those that enhance cognition), to exoskeletons, implanted chips, and nano robots for tissue engineering. They also referred to more conventional lifestyle issues, however, such as physical training and healthy diets.

Our findings are presented in chapters 3 to 5, under the six themes we identified. The first five themes covered in chapters 3 and 4, all deal with what moral issues the participants think are really at stake for military physicians in the actual practice of soldier enhancement. Theme 6, in chapter 5, looks at what the participants think could support military physicians to cope with the moral issues they may encounter when engaging in soldier enhancement.

Chapter 3 focuses specifically on how certain contextual aspects, such as uncertainty, stakes, and dependency relations appear to morally complicate the soldier enhancement practice for military physicians. The chapter features the first two themes:

Theme 1: Uncertainty and high stakes

Theme 2: Dependency relations and conflicting responsibilities.

Chapter 4 includes themes 3 to 5, and discusses in what ways the morally complex context of the soldier enhancement practice can pose real struggles for military physicians, with values, dual loyalty dilemmas, and the risk of sliding down ethical slippery slopes:

Theme 3: Struggling with values (in practice)

Theme 4: Dual loyalty dilemmas

Theme 5: Risks of ethical slippery slopes.

The first five themes are presented here as distinct entities. The actual contextual complexity in which military physicians are situated when soldier enhancement is considered, however, can only be understood in every respect by seeing that all the themes are related to each other. This is because certain aspects of soldier enhancement, such as uncertainty, stakes, and dependency

relations, tend to influence not just the emergence of moral issues in this practice, but also how military physicians are able to deal with them.

Chapter 5 features the sixth theme, considering what organizational ethics support the participants think could help them act in morally responsible ways when dealing with soldier enhancement:

Theme 6: Considerations for ethics support.

The focus group citations support our findings. Throughout the chapters these are presented in italics and, where necessary to improve readability, in redacted form. All the citations end with a reference to their focus group number. Where necessary for the sake of clarity, the respective speakers are identified as 'M' for the moderator and 'P1' etc. for the participants. The references to participants have been allocated per citation, so 'P1' may refer to different participants in different citations. In order to ensure confidentiality, throughout the findings we refer to participants in the masculine form.

Chapter 3

Findings – On the ethical complexity of soldier enhancement practices for military physicians

The first chapter on this study's findings deals with the initial two themes we derived from the focus group data. Both these themes address how certain contextual aspects at times appear to morally complicate the soldier enhancement practice for military physicians.

Theme 1 addresses how, according to the focus group participants, the different aspects of uncertainty facing military physicians in this practice, together with the sometimes high-stake military environment, can complicate their attempts to do no harm to those they may be helping to enhance. Theme 2 discusses that especially in operational settings, the inherent relational context of the soldier enhancement practice, situating the military physician in a complex web of relationships with multiple actors and their values, adds to this moral complexity.

Our findings reveal that the contextual complexity described in these two themes, perhaps the relational aspects in particular, are the reason why military physicians find the soldier enhancement practice so morally challenging at times.

3.1. Theme 1: Uncertainty and high stakes

The participants emphasized during the focus group discussions the importance of doing no harm to those soldiers who are undergoing enhancement, of protecting soldiers' health and safety, and providing good care. At the same time, they also acknowledged that some side effects of soldier enhancement are uncertain and that avoiding all harm may not always be possible in practice:

> *'There is always damage involved, even wearing glasses brings a little damage, it's about balancing the damage*.' (FG 3)

Harm in the soldier enhancement context is not just physical in nature, as soldier enhancements can also be applied to cognitive and emotional human functions. In addition, crossover effects refer to those instances when an enhancement applied in one domain can impact another domain. Physical enhancements such as exoskeletons, for instance, can lead to situations where commanders charge their now much stronger soldiers with additional and/or extraordinary tasks, causing soldiers to experience – over time – (additional) mental or cognitive overloads. According to the participants, especially military physicians run high risks of inadvertently but severely damaging their patients when practising soldier enhancement:

> *'We need to be careful, what we ask of our bodies. Like with these stimulative drugs, they stretch someone's performance, but the body is still tired. Drugs like modafinil work well to make you feel awake and vigilant while in fact you are tired. You can carry on, but in the meantime your body is exhausted. This is one of the risks of enhancement.'* (FG 1)

Some of these enhancements hold the risk that soldiers can become addicted to the drugs involved:

> *'Euphoria is not preferred because that prevents people from making good decisions, and I also would not have my people becoming addicted to drugs.'* (FG 1)

In other words, soldier enhancement, despite its honorable promise of progress, can be a high-risk and morally complex practice for military physicians to work in, and one that at times challenges them to do no harm to those they (help to) enhance. This is especially the case when we take into account the uncertainties confronting military physicians who have to work in this domain, and the potential stakes involved. These two issues are addressed in the remainder of this section, starting with the issue of uncertainty.

3.1.1. Uncertainty

The participants stated during the focus group discussions that the soldier enhancement process is challenging, not just because of the risks involved, but also due to uncertainty about the exact

workings of enhancements. Soldier enhancements are often innovative and experimental in nature, thus complicating the military physician's care-giving role of doing no harm. This is all the more relevant because little is known, the participants emphasized, about the side effects of many enhancements, about whether an enhancement will be entirely safe, especially in the long term:

> *'When I prescribed modafinil, I first searched the internet for its working … I don't think that is fully crystallized yet. … I prescribe something the exact working mechanisms of which I really do not know.'* (FG 1)

In some cases, according to the participants, harm from soldier enhancements might only come to light many years later:

> *'Suppose, I prescribe an 18-year-old soldier medication that will give him maximum strength and speed for 10 days … he wants to fight, so he accepts that, because it will give him an advantage over the opponent … but I told this guy, if you start taking this, you will be stuck with hormonal substitution for the rest of your life … So, he agrees, but in the final 5 years of his life, he will wonder whether taking that medication was such a good idea in the first place.'* (FG 3)

Moreover, little is known, the participants argued, about how enhancements specifically work for different individuals:

> *'There is no file saying: this person can handle this much, and with this pill, they can handle so and so much more. We just don't know.'* (FG 2)

The participants in fact mentioned that at times they rely on their colleague physicians for the workings and effects of soldier enhancements:

> *'Sometimes you just don't exactly know it yourself and you have to trust your colleagues for having sorted things out correctly.'* (FG 6)

Apart from knowledge issues regarding the workings of enhancements, the physicians also reported other sources of uncertainty to affect the actual practice of soldier enhancement. People's preferences and worldviews, for instance, as well as the world around them, can change over time, and consequently, people may wish years later that the enhancement had never been applied to them, or the other way round:

> *'We cannot foresee what the world will look like in 10 years ... Perhaps I now think I will never consider having a chip implanted. In 10 years though, a chip might be necessary for survival on this planet due to for example climate change, and we might suddenly think it is okay to have a chip implanted.'* (FG 2)

To mitigate all the uncertainties regarding soldier enhancements and the subsequent side effects, the participants reported that they generally prefer enhancements that can be reversed:

> *'One value or criterium that we should fulfill, I think, is whether the enhancement is reversible. I think that is an important issue.' (P) 'Why?' (M) 'If you change genetic material, that is quite something, and it can have huge consequences. When it turns out badly in the long term, I think it would be good to be able to reverse it.' (P)* (FG 4)

In short, military physicians who practise soldier enhancement apparently and inherently have to deal with a number of uncertainties. Probably most well known in this regard is that they have to deal with incomplete knowledge and long incubation times. This complicates the assessment of possible side effects, especially on the long term. The assessments become even more difficult to perform when taking into account, as the participants added, that people's preferences and interests – and thus how they value a certain enhancement – may change over time. All these uncertainties, obviously, can impose complex dilemmas upon military physicians. Added to this is the fact that soldier enhancement, unlike civilian variants, is situated in a military context where the stakes can be high, as we discuss in the next section.

3.1.2. High stakes

Stakes can certainly be high in the military domain. According to our focus group participants, these stakes add yet another challenge to the soldier enhancement practice, and in some cases can have a major effect on soldier enhancement decisions:

> *'We are often driven by situations around us, with a lot of pressure. One needs to be strong then.'* (FG 5)

Military threats (geopolitical or otherwise) can be severe during operations, just as humanitarian pressures to act can be substantial. In such emergency situations, as most of the participants acknowledged, enhancements can be considered so pivotal in the field that physicians could see themselves considering applications that they would otherwise be hesitant to prescribe:

> *'When soldiers are enhanced, certain interventions, or drugs with harmful effects for the rest of their lives, that would be a no go for me. Unless there are be great benefits in return, or there is no other choice, we have an emergency situation.'* (FG 2)

Soldier enhancements are considered by military physicians and others as potential life savers, for those to be enhanced, or to enable them in this way to save other people's lives:

> *'That pilot needs this pill. If I don't prescribe it, he runs a much greater risk of flying into the ground on landing at the end of the night ... I am doing this for his safety, and if he is not tired anymore because of this pill, he will also function better at night, and therefore be better able to protect troops on the ground.'* (FG 5)

For a large number of the participants, this life-saving capacity serves as a good reason to prescribe an enhancement.

3.1.3. Closing words on theme 1: Doing no harm in a context of uncertainty and high stakes

The participants perceive doing no harm in the context of soldier enhancement as complex because many contextual issues in this practice can apparently and inherently pose or inflict harm on soldiers. The particularities of the situation, such as the various forms of uncertainty involved in this practice, as well as the stakes that can be high and of a specific nature in a military context, should therefore be considered crucial for military physicians determining how to deal responsibly with doing no harm in soldier enhancement. The following section looks at some typical relational particularities of the soldier enhancement practice.

3.2. Theme 2: Dependency relations and conflicting responsibilities

Not only do military physicians have to deal with high risks and uncertainty in the sometimes-high-stake context of soldier enhancement, they also have to cope, in this context, with a variety of dependency and power relations. This relational aspect of soldier enhancement stood out in the data we gathered and contributes to military physicians experiencing multiple and diverging moral issues and responsibilities in practice. To remain effective, military physicians have to maintain relationships with other actors involved, and thereby deal with all their often-opposing values and interests. At the same time, they are expected to fulfill, in this situated practice, a number of different roles. Military physicians say that as a result of this, at times they experience entangled identities; even more so in operational settings, where units and their webs of relations to a certain extent often function autonomously.

The most salient relationships that military physicians have to deal with in soldier enhancement are the topics discussed next. Firstly section 3.2.1. addresses the physicians' relationship with the individual soldiers, where our participants point out that the individual soldier engaging with enhancement in a sense tends to be in a vulnerable position. Section 3.2.2. explains how, in this practice and according to our participants, military physicians tend to relate to other members of their unit's staff, and to the commander especially. Section 3.2.3. then reports on what the participants said about how the physicians' relationships with their colleague-military physicians may contribute to the complex web of relations and responsibilities that they are situated in when soldier enhancement is considered.

3.2.1. Relationships with individual soldiers

The participants reported during the focus group discussions that they experience a responsibility for providing honesty and openness, to the commander, but perhaps even more so, to individual soldiers:

> *'I feel that responsibility. Honesty and openness I think are important too. If we are going to do this, then I think we should communicate to the soldiers and to the commander, what the enhancement application involves, including the potential consequences, instead of saying: we'll give this a try, but keep it to ourselves.'* (FG 6)

Some of the participants in fact suggested that, because of their training among other things, military physicians generally experience that they feel a responsibility for the health and safety of individual soldiers in particular:

'As doctors, we are to a great extent trained to care for the individual patient, that is of the upmost importance during our entire training.' (FG 3)

From a health-care professional's perspective, the participants emphasized that they think having a sound doctor-patient relationship with these individual soldiers is pivotal to ensure that they go and see their physician whenever they need to:

'If that doctor-patient relationship is not good right from the start, patients will not come to you with their symptoms and problems.' (FG 1)

This relationship could, however, become troubled when military physicians apply soldier enhancements, because, as we discussed, such intervention can be very harmful:

'If you notice that a certain soldier, on account of an exoskeleton, can now walk 50 km in one stretch and is able to lift more, but gets exhausted, or dehydrated, or otherwise injured, [the enhancement] has become ineffective.' (FG1)

According to our participants, a complicating factor in this is that soldiers must be considered in a sense as vulnerable individuals who need to be protected. Soldiers may find it difficult to resist an enhancement that has the potential to make them physically stronger and faster. They may be tempted, moreover, to comply with various forms of external pressure to accept enhancements, such as group pressure to keep up with (hyper)masculine group normativity:

'I can imagine that certain enhancements are more widely accepted in the military. If I look at the infantry, these are all young guys who want that: It's cool, it's great, it will help them do things, expand what they are capable of doing.' (P1) … 'This is actually a vulnerable group, perhaps with a particular self-image, thinking: I must be bigger, stronger, quicker…' (P2) (FG 3)

Pressure could for similar reasons be exerted by superiors, the participants argue, as the physical advantages that soldier enhancements can involve may well suit their interests also:

'My guess is that every commander aspires to have soldiers who endure, who come furthest, and who can be deployed in the best ways possible'. (FG 4)

Soldier enhancement, in that regard, differs from most civilian human enhancement domains in that the employer has a stake in the outcome and plays an active role, moreover, in the application of the enhancements. Meanwhile, soldiers are often relatively young, and thus not always able to protect themselves against the application of soldier enhancements. Regarding mandatory military vaccinations, one participant for instance commented:

'It's very odd that we as an organization force people to get vaccinated. We should constantly remind ourselves just how odd this is. Our population does not realize this, because they are 18 years old, and in some cases relatively undereducated, so we need to stand up for our patients. We have to be aware that this is unusual, so as an organization, we need to think this through properly.' (FG 3)

Recognizing soldiers as vulnerable people generates important moral considerations for military physicians and highlights their responsibility towards individual soldiers:

'As a physician, I will always advise based on what is best for the worker's health, I think that is our job. I know we always have to keep the mission in mind and that we also have a duty to achieve this mission, but we represent the patient, the vulnerable employee.' (FG 3)

At the same time, our participants acknowledged that in the relational and operational context of soldier enhancement, protecting individual soldiers can at times be a complicated matter for military physicians. The next section looks to that end at how military physicians' relationships with other members of the unit's staff add to the complex web of relations and conflicting responsibilities that the physicians have to deal with in soldier enhancement, especially in operational settings.

3.2.2. Relationships with other staff members

The participants wondered about who would in the end be liable for an enhancement, as the military physicians ar in many cases be the ones who actually apply the enhancement, and feel responsible for it:

'What if [the enhancement] causes cancer on the long term, is that our responsibility, or the commander's?' (P1) 'That's a very good question. They want you to inject it, so it is your action. (P2) Whether you prescribe it, or unpack it, your name as physician is connected to it.' (P1) (FG 5)

However, decisions on whether to apply soldier enhancements, for their own sake or to protect the collective, are typically set out, according to our participants, not in the medical but in the command line:

'When applying an enhancement, whatever it is, that poses a health risk for the individual but benefits operationally, someone has to weigh this up, and that someone is not the doctor.' (FG 3)

This is even more relevant in operational settings, where units often function more or less autonomously, with the military commander in charge. At the same time, as some participants argued, especially in operational settings, military commanders may suffer from a lack of knowledge

on the issue, because of which they may not be the ones who can protect soldiers effectively against the possible downsides of soldier enhancement:

> *'Commanders tend to look at the benefits, and brush aside the downsides. … My guess is that commanders quickly see: where the advantage lies, but may lack the knowledge that is needed to fully assess the downsides.'* (FG 2)

Suggested was that physicians would be able to do a better job in this regard:

> *'What we can do better as physicians is provide less "colored" and more transparent information … also ensure [soldiers have] a safe environment to think about enhancement. That is less safe with commanders, I guess. If soldiers ask a commander about the disadvantages [of a particular enhancement], they might not get a completely honest answer.'* (FG 4)

Our data suggests though, that as far as enhancement practices are concerned, military physicians may, like commanders, not always be able to protect soldiers also. This is because in operational settings, military physicians are generally part of the unit to which they are assigned. This seemingly imposes pressure on them, often in implicit ways, to internalize military values that tend to underline the importance of the mission, strategic thinking and loyalty to the group, at the possible cost of their efforts to provide care for individual soldiers:

> *'I currently work at the health center, where I lean more towards providing individual health care for patients, whereas I notice that you [in your operational roles] are much more focused on the health of the larger population.'* (FG 6)

The relational aspect of soldier enhancement may, in other words, inherently affect the military physicians' personal perspectives, decisions, and advice on soldier enhancement issues. In operational settings, moreover, military physicians subject to more or less extrinsic relational pressures such as that in these settings they are required to fulfill multiple roles and responsibilities in their unit, which can lead to significant care provision dilemmas:

> *'We are not just there as a curative doctor, but also as the commander's advisor, the medical advisor, and the mission's doctor.'* (FG 1)

The participants mentioned that they are not always in a position to oversee every aspect of the mission despite all these different roles, which adds more complexity to their assessment of what advice to give regarding soldier enhancements:

'There could be something really important, why we need to gather intelligence information in a country like Mali, something that we [as physicians] are not able to oversee. So, are we always able to judge, from our position, usefulness and necessity?' (FG 5)

Especially during operational practice, the participants argued, military physicians largely depend on their unit's staff and commander to get the information they need:

'I don't think I can always oversee the usefulness and necessity of a commander's goal. And perhaps they may not even want to share that exhaustively, for whatever reason...' (FG 5)

Because of this, and in order to survive socially alongside other staff members and their goals, military physicians involved in soldier enhancement must uphold healthy relations with all those responsible for the mission, especially the commander. Our participants regard themselves as most powerful in these relationships when they are able to refer to medical caveats in their arguments:

'Prescribing medication, that is my call. So, if the commander disagrees, and says: we are going to do this anyway, they will have to find other ways of getting that medication, not through me.' (FG 1)

As the participants pointed out, however, exercising this power excessively runs the risk of putting too much strain on the relationships with relevant others in the unit's staff:

'You don't want to be the doctor always saying no, otherwise they will no longer tell you anything, because they don't want to get no for an answer.' (FG 6)

All in all, it seems that dependency relations with the other members of the unit, especially with those responsible for a mission such as the commander, can potentially cause significant care provision dilemmas for military physicians. On the one hand this is because in the actual practice these relations tend to add weight for military physicians to the mission, strategic thinking, and loyalty to the group rather than to the individual patient. Being part of a military unit apparently contributes to a more or less intrinsic adoption of military values by military physicians practicing soldier enhancement. At the same time, the other actors in this web of dependency relations may impose external pressures on military physicians, to comply with these values.

3.2.3. Relations with colleague-military physicians

A third set of dependency relations that the participants discussed in the context of soldier enhancement were those with their colleague-military physicians. The participants emphasized that in soldier enhancement, military physicians not only have to relate to individual soldiers and the unit's staff, but also to their colleague-military physicians. This is the case, even on small forces'

missions such as the one in our study. This particular force, for instance, normally has only one physician per mission, who may nevertheless consult colleague physicians back home, to receive guidance on best practices, or to reflect with these colleagues on opinions and decisions regarding a specific soldier enhancement. The participants also said that acting physicians generally replace a predecessor, whose opinion could still actually influence how they dealt with moral issues when it was their turn to serve the unit. This applies specifically to situations where the predecessor went along with the commander:

> *'That is difficult, especially if your predecessor was an easy prescriber.' (P) 'Would you be affected by that?' (M) 'No, yes, well, I don't know. Probably. It does make you wonder why a physician prescribed something or not.' (P)* (FG 1)

The background to this difficulty to resist an already adopted lower standard was not discussed at length during the focus group sessions. The bottom line here is that, although medical assessments of soldier enhancement are commonly regarded as more or less rational and autonomous, a fixed result of some kind of mere logical reasoning, they are in fact complicated by other actors, including colleague-military physicians. At the same time, the influence that other actors may have on a military physician's opinion does not necessarily mean that these physicians will always agree with each other on soldier enhancement issues. In section 3.2.2., for instance, we already saw that the extent to which military physicians adopt military values may also depend on where they work and in what role:

> *'I currently work at the health center, where I lean more towards providing individual health care for patients, whereas I notice that you [in your operational roles] are much more focused on the health of the larger population.'* (FG 6)

Differences in opinions on enhancement issues even showed during the focus groups between military physicians that were from the same armed division:

> *'Isn't it our job to tell the commander: this individual is no longer deployable, you should replace him, rather than think —if he is no longer deployable, everything will fall apart, so I have to keep him deployable.' (P1) 'But what if there is no one to replace him? Is that our responsibility?' (P2) 'You are also part of the military organization.' (P3) 'So, the mission takes priority?' (P2)* (FG 6)

During one discussion, our participants seemed to have diverging views on whether medical or military values should be prioritized in soldier enhancement issues:

> *'Well, yes, that is my issue with Modafinil. If it is used for flight safety, there is no discussion. But when it is used for speeding up reactions or improving combat related tasks, a line is*

crossed. That should not be up to curative care providers … It has to be health-promoting. As doctors, we do not advise a commander how to inflict more damage on the enemy.' (P) 'I don't know, in an actual war situation, I guess I would be prepared to consider options to win that battle. That is not where you want to go, but then again…' (P2)* (FG 1)

Participant P* here seems less inclined to consider the military aspects of soldier enhancement issues than others. Only elsewhere in the discussion does it becomes clear that P* is implicitly referring to IHL in his statements:

'It is stated that we as members of the defence medical service, are not allowed to actively engage in hostilities. We are appointed specifically to provide medical care. Once we engage in activities that can harm the enemy, we cross a line.' (FG 1)

At yet another point in the discussion, P* specifically considers that when military physicians apply enhancements to soldiers, in some cases they may in fact be jeopardizing their protection as medical personnel as this is offered in situations of conflict under IHL:

'Yes, indeed, that is what I mean: I improve soldiers' chances of survival in the deployment area, as opposed to: I support my soldiers in carrying out their hostile activities and, as a result, I become an inherent part of the battle units, thereby leaving the medical chain.' (P)* (FG 1)

The emotions displayed on this issue by the other participants suggest that positioning military physicians on the military-medical continuum can lead to fundamental and moral debates on the subject of soldier enhancement. Clearly underlining this scenario is that diverse views between physicians on whether prioritizing either medical or military values in specific situations, can put those physicians who tend to prioritize their responsibilities towards the individual soldier in a more vulnerable position. This is explicitly not a plea for creating unity of opinion between military physicians at all times though, since diverging views can serve as a welcome and necessary source of institutional resilience in a military context.

3.2.4. Closing words of theme 2: Soldier enhancement in a web of dependency relations

For our participants, soldier enhancement is inherently relational, and it is this relational aspect that can help explain much of the moral complexity they typically experience in this context. On the one hand, for instance, our participants report experiencing that protecting the health and safety of individual soldiers, who they mainly consider as vulnerable in the context of soldier enhancement, is their primary moral responsibility. At the same time though, and especially in operational settings, their assessments and considerations regarding soldier enhancement issues will inevitably be shaped and affected by the power and dependency relations in which they are situated. One of the

mechanisms at play here, as we have seen in 3.2.2, is that military physicians tend to adopt military values in this process, which may emphasize mission goals and a loyalty to the well-being of the unit as a whole, rather than the health and safety of individual soldiers per se.

In the relational context of soldier enhancement moreover, military physicians often fulfil multiple roles at the same time. The moral issues and dilemmas in soldier enhancement that may come with these different roles thus all tend to converge within one particular member of the unit's staff: the military physician. The resulting integrative perspective may, on the one hand, enrich the military physicians' assessments of soldier enhancement issues. However, such a convergence of issues and dilemmas can also significantly complicate their generation of any opinion, decision, or advice regarding soldier enhancement issues. This is all the more so because, if military physicians aim to remain effective in all their different roles, they are supposed to accommodate – at all times – good and healthy relationships with all the relevant actors involved. Among these are also the colleague-military physicians who, according to the participants, at times contribute in this practice to the complex web of relations and conflicting responsibilities in which the military physician is situated. Sifting effectively through this complex relational context of soldier enhancement with all its dependency and power relations, especially in operational settings, obviously requires a considerable amount of insight and skills on the part of military physicians.

Chapter 4

Findings – Struggling with values, dual loyalty, and slippery slopes in a context of uncertainty, high stakes, and dependency relations

The first two themes so far have dealt with what the participants regard as salient aspects of the actual practice of soldier enhancement, and how they think these aspects can complicate the military physicians' ability to deal with the moral issues they actually encounter in practice. We addressed how different forms of uncertainty in soldier enhancement may at times jeopardize military physicians' efforts to do no harm to soldiers, especially when the military stakes are high. The suggestion was put forward that the relational context in which military physicians are situated in this practice may complicate these efforts even further, especially in operational settings.

This chapter presents themes 3 to 5, which illustrate how the contextual issues from the first two themes tend to work out in a moral sense for military physicians in the context of soldier enhancement. Theme 3 addresses what values, according to the participants, are at stake for military physicians in soldier enhancement, how the physicians tend to struggle with these values at times, and where they seem to hold different perspectives with regard to these values. Theme 4 discusses the dual loyalty dilemmas that we identified in the context of soldier enhancement in our data. Theme 5 subsequently reflects on how, taking military physicians' existing relations and associated responsibilities among other things into account, they may run the risk in the actual practice of soldier enhancement, of sliding down ethical slippery slopes in the course of a gradual process, as it might not be always immediately clear which moral standards and values are at risk of violation (Bandura, 1999).

4.1. Theme 3: Struggling with values

The focus group participants were asked which values are important for them in the actual practice of soldier enhancement. Almost without exception they mentioned bodily integrity and autonomy, along with health and safety, and doing no harm. Mentioned frequently in connection with this topic were the values of openness, transparency and informed consent, as well as the ability to reverse enhancements, or at least their effects. The values of proportionality and effectiveness were also mentioned, as indicators for the legitimacy of enhancements like military necessity. The participants felt moreover, that the purpose of the enhancements should be clearly stated at all times, and not carried out covertly or otherwise, to offset organizational shortcomings.

This third theme addresses in what ways military physicians sometimes struggle in the morally complex context of soldier enhancement that was discussed earlier in the first two themes with the values they mentioned. On the one hand, as the focus groups point out, they often refer to these values in a normative sense, as if these should be seen as moral principles, as rules that simply should be adhered to. On the other hand, their reflections highlight the moral complexity of dealing with these values when actually practicing soldier enhancement. The theme also addresses how views of the participants on the values tend to diverge.

The issues of knowledge and reliance on research were not specifically mentioned when the participants were asked about what values they think are important in soldier enhancement. Nevertheless, we decided to add a section on these topics because it became very clear during the discussions that our participants considered these values were important for them.

4.1.1. Health and safety, doing no harm

Throughout the focus group discussions, the participants expressed many times how they value the health and safety of individual soldiers, and of doing no harm to them with soldier enhancement. They often stated this in more or less obligatory terms, such as the participant quoted in 3.2.1.:

> *'As a physician, I will always advise based on what is best for the worker's health, I think that is our job. I know we always have to keep the mission in mind and that we also have a duty to achieve this mission, but we represent the patient, the vulnerable employee.'* (FG 3)

Suggested by this citation is that protecting the health and safety of individual soldiers can and should be a military physician's prime concern at all times in soldier enhancement. In contrast, we saw in chapter 3 that the actual practice is much more complicated. This is not only because military physicians have to deal in this practice with a variety of uncertainties, but also because it is a consensus seeking relational practice in which military physicians, in order to remain effective,

cannot simply limit their efforts to rule-following and abiding constraints. Instead, they have to engage actively in the intersection of the individual soldier's interests and the other actors' values:

> *'I guess this is one of our biggest dilemmas: what price does the individual soldier pay on the longer term, like with exoskeletons, continuing where others stop, that tactic. We can do a lot, but should we want all this, is it right for the individual in this case? For the mission perhaps, but we also need to protect the individuals against themselves.'* (FG 1)

In contrast to the former citation, in which doing no harm to individuals with soldier enhancement was presented as a principle to hold on to no matter what, this citation offers a more nuanced and relational oriented perspective. This is because it addresses the actual struggle that military physicians may experience in the relational context in which they practice, and in which they have to deal, because of that, with lots of morally grey areas.

4.1.2. Bodily integrity, free will, and autonomy

A similar struggle that emerged throughout the participants' considerations of soldier enhancement was the one they apparently have with the values of bodily integrity, free will, and autonomy for those receiving enhancements. They emphasized during the focus group discussions the importance of respecting the bodily integrity of individual soldiers, and to apply enhancements to them under the conditions of free will and autonomy:

> *'There is the integrity of your body, and you should be allowed to decide for yourself whether you want to use anything, and whether you trust it enough to put in your body. I find that a very important value in our [Western] society, and one that we must firmly and resolutely defend.'* (FG 1)

The participants acknowledged at the same time, that the power balance in the military may be such that an individual's interests eventually lose out in favor of the collective:

> *'In the armed forces, … sometimes the individual's interests are put aside for the sake of the collective, because the interests of the group are more important.'* (FG 3)

They also acknowledged that in exceptional cases, the military may restrain its personnel's autonomy and bodily integrity:

> 'Signing up for the military means that you automatically give up some autonomy. Not every soldier realizes that. [For instance,] soldiers are stripped of their freedom to choose a doctor.' (FG 2)

The issue for military physicians is then perhaps not so much whether enhancements may be enforced on soldiers, but rather in what situations and to what extent a soldier's rights to individual autonomy should be respected. The participants appeared to differ in their views on this, and also to what degree they generally struggle with these kinds of issues. Some for instance proposed that soldiers should, up to a certain point and if they at least serve in a professional army, accept the infringement on their bodily integrity for the sake of soldier enhancement, because it is an inherent part of their job:

> *'It comes with the choice to join the armed forces: you might need to put your life at risk in the field, and sometimes you just have to try things.' (P1) 'You choose to jump out of an airplane, so perhaps you also choose to work in the forces to get a pill that gives you extra muscle mass.' (P2)* (FG 6)

Another participant put it this way:

> *'You need to have freedom of choice, but only up to a certain point, because, by choosing to serve in the armed forces, you accept that you have to conform to certain rules and provisions.'* (FG 3)

One participant declared to accept a commander's mandate to enhance a soldier as long as the stakes were high enough, but immediately added that such a mandate should only be given when clarity exists about the gains of the enhancement:

> *'If lives are seriously at risk, I could well imagine commanders ordering a particular enhancement. If the gains are dubious, the enhancement should not be enforced.'* (FG 4)

The issue with this is that even when there seems to be clarity about gains on forehand, whether the enhancements actually deliver these gains, is open to debate. Often, this can only be judged in hindsight and different actors may attach different meanings and connotations to what the values of bodily integrity, free will, and autonomy should signify for individual soldiers. What further complicates this issue, according to the participants, is that soldiers' autonomy can be infringed in other ways than through formal orders. Soldiers can in fact experience pressure to use enhancements in situations where there are no formal mandates. One participant suggested that the power of superiors can play a role in this:

> *'It greatly depends on the commander's stance as they will leave their mark on the group, and therefore also on the individuals within it ... when asked to do something, the individual soldier will feel less free to say yes or no.'* (FG 6)

Hierarchical power, whether exercised intentionally and formally, or in more subtle ways, can be a powerful tool in the context of soldier enhancement, because the employer is regarded in this context as an important and powerful stakeholder. Another participant pointed out that peer pressure can also challenge a soldier's free will regarding enhancements, and perhaps in even more effective ways:

> *'The problem is when your whole platoon agrees to take daily medication, and so they all do 12-hour shifts; at some point the work schedule gets adjusted accordingly. If I then say 'I do not want this,' I will not be able to keep up anymore. Nobody forced me to take the medication, but indirectly I do feel forced.'* (FG 4)

Numerous times during the focus group discussions, the participants in fact questioned whether, with or without formal mandates, soldiers would at all be able to take enhancements of their own free will, because of all the powers involved:

> *'Let's say, you are part of that large unit, and as an individual you are asked: "Peter, we are going to substitute your legs with blades, we will turn you into a super soldier, indispensable for our unit." Would you want that? In this case you might wonder whether the soldier is able to foresee what this will mean for his entire future, if he is fully aware of what the enhancement will do to him until his retirement … So, can he actually make an informed choice? Because, when you are selected for specialist tasks, like taking part in certain training programs, you do ultimately feel honored. People may have a specific role, or be dedicated to the organization … but to what extent can we say that a soldier can actually make decisions out of free will, or is it servitude, the will to perform for the sake of the group? … What if we put the same question to Peter as a civilian passing by? Would he then make the same decision?'* (FG 5)

Something in this context that was additionally worrying the participants, and was also mentioned in section 3.2.1., is that concerns should be voiced about the resilience of the soldiers involved. Important factors in this regard are the age and masculine orientation of the population:

> *'We have to realize that we are working with youngsters, adolescents, who do not want to lose face in front of their group, and who therefore put pressure on themselves to perform. If you are a bit different, you will be cast out of the group. … Are they really able to make their own choices in such a situation, I wonder?'* (FG 6)

Soldiers, in other words, may be extra vulnerable to infringements on their bodily integrity and autonomy for reasons of soldier enhancement. Their bodily integrity and autonomy in the soldier enhancement context must therefore be considered not just as bound by possible mandates, but

also as fragile and open to powerful manipulation in very subtle ways. The participants referred to this issue so many times in both implicit and explicit ways that arguably, they experience an almost moral obligation to protect these soldiers against such specific mechanisms, which has become an inherent part of their struggle with the issues of bodily integrity and autonomy in soldier enhancement:

> *'One can easily say that the individual's free will should always come first, but then, when we see the enemy gaining a great advantage over us by having that technology … how long can we keep on defending our norms and values? On the other hand, if you go for it [enhancement], to what extent can you still stand up for your own standards?'* (FG 4)

Evidently, the issue here is not so much whether bodily integrity, free will, and autonomy are important values for individual soldiers, but rather how these values can be achieved in responsible ways, taking all the relational and other contextual aspects of soldier enhancement into account. Such an approach to the values of bodily integrity, free will, and autonomy in this practice goes well beyond abstract rules and moral principles.

4.1.3. Transparency, openness, and informed consent

When the participants were asked about which values they thought important in soldier enhancement, they all – almost without exception – mentioned the values of doing no harm, bodily integrity, free will, and autonomy, but many of them also mentioned the values of openness and transparency:

> *'Transparency, I think that is also important. That an individual can make an honest and considered choice. Assuming thereby that this individual has the freedom to make that choice, that is what I find important.'* (FG 4)

Transparency and informed consent, the participants argued, can in a sense counter some of the power dynamics at play in the web of dependency relations in which the practice is situated. One of the participants specifically referred to this when discussing the issue of group pressure:

> *'Transparency, together with informed consent … that the person concerned has all the knowledge about the interests [of the enhancement], why we want it, what the downsides are, what is currently known … One example is that we will take blood with us in certain cases … So that if somebody is bleeding, you can take this blood from your buddy ... This blood is not screened for blood type and infectious diseases and so on, so you do not know its effects … This is why we absolutely need informed consent here … especially because of the enormous group pressure.'* (FG 2)

What is meant by informed consent in the context of soldier enhancement, is that enhancements may only be applied after the explicit agreement of the one to be enhanced, and that this explicit agreement can only be made after being adequately informed, both about the enhancement, and about its possible side effects, especially on the long term. Informed consent is thus flawed if important information is withheld, or if the information provided to those to be enhanced is inaccurate. The participants wondered in that sense whether and how the Dutch armed forces could guarantee adequate informed consent in all cases of soldier enhancement:

> *'I wonder whether and to what extent our organization can really guarantee that soldiers are fully and truly aware of what someone [who is going to be enhanced] is entering into.'* (FG 5)

The question was raised by some participants in this regard about the openness and honesty of defense organizations to provide at all times the correct information on soldier enhancements:

> *'If the armed forces communicate "It's all right", will it then be good, or are they just communicating this because it benefits the organization if soldiers can run faster?'* (FG 6)

Regarding the long-term effects of soldier enhancements, moreover, we can speculate whether any organization – any person in fact – would at all ever be able to oversee and communicate all the possible consequences that a person may have to deal with over a lifetime, especially when considering that people usually undergo all kinds of different jobs and life stages. At the beginning of our findings furthermore, we pointed out the various forms of uncertainty that seem to be inherently related to the soldier enhancement practice. Providing information, moreover, is one thing, but ensuring awareness is much more difficult to achieve, and depends on many different mechanisms.

Like with the issue of doing no harm and the values of bodily integrity, free will, and autonomy, the in-depth discussions among the participants on transparency, openness, and informed consent display a contextual and relational complexity that is difficult to capture in rules and standards. This is not to say that the findings suggest standards such as informed consent are useless. The issue is rather that the actual complexity of dealing responsibly with these kinds of values generally only starts for military physicians when they attempt to apply such standards in the context of the actual practice and the stakes involved.

4.1.4. Reversibility

A measure that several participants mentioned as an important means of dealing more effectively with the moral issues involved in practicing soldier enhancement, such as the do not harm principle, is reversibility. Closely connected to the notion of invasiveness, reversibility refers to the possibility to undo an enhancement, or to fully recover from its effects, something that is generally easier to

achieve with less invasive enhancements. In section 3.1.1., the participants already stated that the reversibility of soldier enhancements gives military physicians a means to mitigate uncertainty. It allows them to have more control over the effects of soldier enhancements, which in turn enables them, as one of the participants explained, to take more meaningful responsibility towards the soldiers they (help to) enhance:

> *'It has to be something I can take responsibility for. That is why the aspect of reversibility is important to me.'* (FG 6)

The participants indeed emphasized that as military physicians, they generally prefer to apply reversible over irreversible enhancements because soldiers may not be soldiers for the rest of their lives. Moreover, as a person's views may change considerably over time, the reversibility of soldier enhancements is then a welcome feature:

> *'It could well be that in 10 years' time, how you think about these things will change. I am now 30 years old, but when I was my 20, I had a completely different view of the world. Perhaps a decision I made back then, I would now regret.'* (FG 3)

Some participants actually voiced their opinions during the focus group discussions, that the reversibility of soldier enhancements should be conditional to the soldier enhancement practice:

> *'My opinion is that the effects on the soldier should always be short-haul and reversible, that the basis should be the soldier's own capabilities, what they are capable of with their own body and mind, that we may only enhance them for short periods of time, and with reversible means.' (P) 'Why?' (M) 'Because otherwise I think the violation of their bodily integrity is too great' (P)* (FG 2)

Another participant put it this way:

> *'If we are actually going to modify a person irreversibly, and this person will feel the effects for the rest of their life, to me that is unacceptable'* (FG 5)

Not all the participants shared this opinion though. Although they generally favored the reversible over the irreversible option in soldier enhancements, some argued that whether to apply a non-reversible enhancement would depend, among other things, on how wearisome and serious the after effects may be for that soldier:

> *'A can of Red Bull, well, if anybody gets a heart rhythm disorder from that, we can still put him on a monitor and probably it will all end with a sizzle. But if an enhancement brings definite change, I would find that difficult on the long term.'* (FG 6)

What the participants did agree on is that they think soldier enhancement applications that are irreversible should not be contemplated even, without conscious and careful consideration. The greater and long-lasting the effects of an irreversible enhancement, the more the participants deemed mindful and careful consideration necessary:

> *'You have to weigh up really carefully, because of the consequences, whether or not to apply that [particular enhancement] rather than prescribe a pill whose effects will disappear in 4 hours.'* (FG 4)

The participants suggested, in other words, that whenever decisions are to be made on applying soldier enhancements, the aspects of reversibility should be mindfully and responsibly considered. The reversible option should be favored, except for when the effects of the enhancements are zero with certainty, or if there is no other option available *and* the benefits actually outweigh the downsides. Not discussed at length though by the participants, was how to assess all these different factors, for example who may (or should) be involved in the decisions, and who has (or should have) a voice in that process. Meanwhile, the ongoing enhancement practice may not provide military physicians with straightforward answers, as all these kinds of deliberations will be subject to uncertainty and will be taking place in the earlier mentioned relational context of a complex web of dependency and power relations.

4.1.5. Knowledge and reliance on research

According to the participants, knowledge about the mechanisms that result in soldier enhancements having side effects, can in a similar way as reversibility, counter the uncertainty confronting military physicians who are directly involved in soldier enhancement. They addressed the value of knowledge and research several times, such as in section 3.1.1., where one participant emphasized the efforts that had been made to track the exact mechanisms of how the drug modafinil works before prescribing it. Another participant underlined the value of knowledgeability about soldier enhancement applications by stating:

> *'It has to be well researched … again it boils down to that doctor-patient relationship, you must be able to stand behind it, and to feel knowledgeable in a sense so that: I feel I have a good idea about what is happening here, and I can actually agree with that.'* (FG 1)

When the participants talked about knowledge and research during the focus groups, such as in 3.2.2., they seemed to be referring to medical scientific knowledge specifically:

'Commanders tend to look at the benefits, and brush aside the downsides. … My guess is that commanders quickly see: where the advantage lies, but may lack the knowledge that is needed to fully assess the downsides.' (FG 2)

Military physicians appear to rely heavily on medical science for practicing soldier enhancement. The participants in fact emphasized many times the importance of having thorough knowledge about the workings of soldier enhancements, and of doing research on their mechanisms and effects:

'Perhaps also measuring, studying the statistics, keeping records: 'look, now everybody is taking it 5 times a week, it used to be just once, what is happening?' (FG 4)

Another participant put it this way:

'I think we need to have good scientific arguments underpinning what we plan to do. Openly do research on medication, treatment, or whatever. … It is somehow a delicate balance, but I think we have to dig deeper for the science behind it. That is how I feel, so that we can underpin things.' (FG 2)

At the same time these calls for knowledge should not be seen as absolute. For instance, the physician mentioned above who tried to track the workings of modafinil, succeeded only partially, yet still decided to prescribe it. During the discussions, the participants equated this with prescribing paracetamol, whose exact workings are still also apparently unknown:

'Basically, I don't have a problem with that … you want to help the organization, the pilots, and the people carrying out the research. But I did think, I was prescribing something despite not knowing its exact working mechanisms.' (P1) 'On the other hand, we don't know all about that with paracetamol either.' (P2) 'Exactly.' (P1) 'We still don't know the workings of modafinil.' (P2) 'I didn't mind, I didn't think it was annoying.' (P1) (FG 1)

The participants apparently think it is inherent to the practice of medicine, that complete knowledge on the workings of prescription drugs is both important and may be lacking at the same time, even for commonly prescribed drugs. They also reported, in 3.1.1. for instance, to rely for this knowledge, on their military-colleague physicians:

'Sometimes you just don't exactly know it yourself and you have to trust your colleagues for having sorted things out correctly.' (FG 6)

The participants apparently consider knowledge building in the context of soldier enhancement an inherently imperfect, relational, and medical process.

4.1.6. Proportionality, effectiveness, and necessity, in the context of legitimacy and misuse

When the participants were asked what values they think are important in soldier enhancement, they mentioned several times, besides the values addressed in the former six paragraphs, proportionality and effectiveness:

> *'Proportionality, you should first look at other means before turning to human enhancement. It has to be in proportion with the benefits it brings. … And effectiveness, that it does what you intended.' (R) 'Do you have an example for us?' (M) 'Sure, when you are deciding which stimulant drug to use. Will it do what you want it to do, or are you using it for some other purpose? … Even when you are not tired, Modafinil can enhance cognitive performance, which is why it is so popular on the black market. … My take is that [with soldier enhancement] you need to look very carefully at what you are using it for, and whether it actually suits that goal.' (P)* (FG 1)

The same participant commented again on keeping things in proportion:

> *'Speaking of proportionality, we can now take someone's temperature by using a sensor on the back of their arm. We don't need a chip for that.'* (FG 1)

The participants considered the values proportionality and effectiveness, as shown in the following comments regarding considerations and concerns about the health and safety of soldiers, as aspects of legitimacy in soldier enhancement. These aspects include decisions on whether people consider a certain application of soldier enhancement legitimate:

> *'If there are serious long-term effects, like not living past the age of 45 because of an enhancement, turning green, start getting feathers, or whatever, you should not do any of that. But if by taking a little pill this person can keep on doing the work for 2 days, and is then able to sleep for a week, I find that an absolutely legitimate means. The alternative is that he falls asleep and dies on duty.'* (FG 5)

Having a legitimate goal, in other words, is an important factor when considering soldier enhancements according to the participants, which also shows from the following comment:

> *'In an ideal situation, where there is a truly legitimate goal, that would make a difference in whether I would find human enhancement acceptable.'* (FG 5)

Military necessity was considered, apparently and by the participants, as an important measure for this legitimacy. Firstly, this shows from the following citation:

> *'Operational necessity makes something* legitimate?' (P1) 'I guess so, yes.' (P2) (FG 5)

Secondly, the confirmation in this comment is consistent with the statement in section 3.1.2, where the participants said they could imagine that in exceptionally threatening and humanitarian situations demanding a sense of urgency, they would be willing to consider applying more far-reaching enhancements than in standard situations. At the same time, however, they acknowledged that an issue such as the legitimacy of soldier enhancements is a complex phenomenon. It involves considering not only proportionality and effectiveness, but also what should be viewed as a military necessity, and that the assessments of all these issues can be subject to interpretation:

'I think the most important value is proportionality, which is super subjective.' (FG 2)

Besides issues of interpretation, on autonomy for instance, or on the bodily integrity of individual soldiers, the assessment of legitimacy in soldier enhancement can also involve aspects of negotiation, about whose voices should be heard in the relational context of soldier enhancement. In 3.2.2., for instance, participants stated that whether something is proportional, is typically a commander's decision:

'When applying an enhancement, whatever it is, and it brings risk for the individual but benefits operationally, someone has to weigh this up, and that someone is not the doctor.' (FG 3).

In that same section, the power that military physicians tend to have in the medical aspects of soldier enhancements, was also apparent:

'Prescribing medication, that is my call. So, if [the commander] disagrees, and says we are going to do this anyway, they will have to find other ways to get that medication, not through me.' (FG 1)

Similar dynamics of interpretation and negotiation such as with the issue of the legitimacy of soldier enhancements can be seen with the issue of misuse also. The participants emphasized a few times in fact that, because the organization tends to value battle power, it could be tempted at times to compensate, by means of soldier enhancements, for what in fact could be called organizational shortcomings.

'What I see, is that people are really being challenged because there is just not enough personnel. The question then is: should we subject those who are present with pills, just to get them to work longer?' (P1) …': I totally agree. Things stand or fall with a sound basis, that you have sufficient personnel in all the different disciplines to get any task done. In a situation where you have to go on but you notice, despite good work schedules, that people are exhausted … then we could prescribe it, but not as the new normal. Absolutely not.' (P2) (FG 2)

Another participant put it this way:

> 'If medication is needed to keep on going with certain work, you have to wonder whether there is something wrong with that work, or whether the work description that has been set is actually achievable.' (FG 1)

Soldier enhancements, with all the potential risks involved, should only be considered as a last resort by enhancers, the participants argued, not as an easy means:

> *'What is important to me when prescribing such a thing, is, has [the organization] done everything it should, has it set the right rules, and ensured that people get a good night's sleep? The circumstances, are these as optimal as possible within the boundaries of the operational activities? For me, modafinil is not a first but a last resort.'* (FG 1)

All the participants in fact agreed on the disapproval of misuse of soldier enhancement. On the other hand, what exactly, should be considered misuse, or a last resort, and how can we reach a common understanding on what to do about it? These and other issues have to be ultimately determined in the complex arena of dependency and power relations where the soldier enhancement practice is situated.

4.1.7. Closing words on theme 3: Struggling with values in practice

This third theme illustrates the dualistic working of ethical values in soldier enhancement. On the one hand, the participants tend to regard these values as norms that should be adhered to, whereas at the same time they seem to have a thorough understanding of how difficult and morally complex it is for them to actually deal with these values in practice. Examples have been given here on how military physicians might have diverging views on ethical values, and in what ways they sometimes struggle to deal with these values responsibly as a result of the contextual and relational complexity that seems so inherent to the practice of soldier enhancement.

4.2. Theme 4: Dual loyalty dilemmas

What connects the three themes in this chapter is that they all look at our findings on how the relational and other contextual issues addressed in chapter 3 work out in a moral sense for military physicians in the context of soldier enhancement. The first one, theme 3, discussed our findings on how military physicians tend to struggle with the values they think are so important in the practice of soldier enhancement. We now turn to theme 4 and examine in what ways military physicians can be confronted with a phenomenon that is well-known in the literature and that we briefly discussed in the introduction to this research paper: the dual loyalty dilemma.

In the medical sector, the dual loyalty dilemma refers to situations where the loyalty of medical experts, such as the military physicians in this study, tends to be deflected from the individual patient, as a result of the physicians experiencing explicit obligations or moral responsibilities, to a third party (Benatar & Upshur, 2008). Our findings reveal two related dual loyalty dilemmas that our participants typically experience with soldier enhancement: the Individual-versus-collective dilemma, and the medical-versus-military dilemma. A third dual loyalty dilemma does, however, seem to be lurking.

The medical-military dilemma concerns the mixed emotions that military physicians can experience in soldier enhancement, when they have the feeling of being tossed back and forth between the responsibilities of their two professions. When it comes to the individual-collective dilemma, the focal point shifts to the feelings, experiences, and responsibilities that military physicians may have when they are involved in a specific soldier enhancement situation, such as when an individual soldier's health and safety is to be compromised for the sake of (parts of) the larger unit. The third dilemma focuses on the opposing responsibilities that military physicians may experience in soldier enhancement when the employer role is more or less imposed on them, or if they regard themselves in some sense as an extension of the employer.

4.2.1. Medical versus military

Military physicians are at the same time a doctor and a military. They are bound by an oath in both the medical and the military domain. A fair number of participants reported experiencing internal pressures due to taking this double oath:

> *'That ongoing conflict, between the oath we took as doctors, and the oath that we kind of took as officers.'* (FG 1)

The "kind of" in this citation suggests, however, that many military physicians see themselves as a physician first. But there were other voices:

'Of course, we are military, but we are also doctors. De medical oath still takes precedence over the military one.' (P1) 'Is that so?' (P2) (FG 5)

Being a military, according to some participants, can considerably affect their views on soldier enhancement, and what stance they take, as opposed to non-military physicians:

'What do you think is important when considering human enhancement? What values are important in your role as military physician' (M)? 'It depends a bit on how wide your perspective is, because as a military physician I think about things differently, I don't just look at the individual, but include the wider military operation.' (P) (FG 4)

Added to this, is something that was discussed in section 3.2.2. Military physicians, especially in operational settings, are usually part of the unit they are assigned to. This can activate all kinds of mechanisms that promote both the intrinsic and extrinsic adoption of military values regarding soldier enhancement. One participant described it like this:

'How independent can you remain, as a physician, and how independent are you as a military physician, having being trained by the military?' (FG 4)

Regardless of their views on the medical-military dimension, everyone taking part in the discussions on soldier enhancement reported that they experienced a continuous struggle with their loyalty to both disciplines, or felt they were being tossed back and forth between two conflicting moral responsibilities:

'That is always the case, being a military physician, are you a doctor, or a military? You are both, that is the recurrent theme with this kind of thing. It's a really complex position.' (FG 1)

The internal pressure that military physicians may experience due to this conflict over dual roles when dealing with soldier enhancements is apparently severe. We can therefore expect that divergent views on this medical-military dimension might also cause pressure among physicians practicing soldier enhancement. Indeed, as we have seen in section 3.2.3., when one of the participants voiced a different opinion on whether medical or military values should be prioritized in soldier enhancement issues, this sparked a lot of emotion in the discussion group, which is often a sign that morality issues are at stake. As this particular example demonstrates, pressure among military physicians may develop from even the slightest divergence.

4.2.2. Individual versus collective

The second dual loyalty dilemma that emerged from our research data concerns the tension that military physicians may experience, according to the participants, when they are confronted with

soldier enhancement decisions on whether to sacrifice the health and safety of an individual soldier for the sake of the larger unit:

> *'If you were to ask me, 'would you prescribe an individual something that enhances the performance of the group but might harm that individual?' I don't know whether I could or would want to do that. I think my conscience would bother me.'* (FG 6)

The issue with these kinds of issues is that the moral responsibility that military physicians tend to experience, on account of their training, for the individual soldier, is breached:

> *'It is clear during our training [to become a physician]: the individual patient is our primary responsibility. We don't think a lot about the collective. But in the armed forces, the collective is important, more important perhaps, than the individual. … To put it bluntly: It is very likely that if more people survive, someone will have to pay the price.'* (FG 3)

Some participants nevertheless suggested that making informed choices about the individual versus the collective is something that is inherent to medical practice:

> *'That is part of medical science, to weigh up the individual versus the collective, and we are responsible for both.'* (FG 3)

What might especially spark the dual loyalty dilemma discussed here, is that the military context of soldier enhancement seems to add weight specifically to one side of the coin:

> *'The military serves the collective, not individuals, except in rare cases when the individual's interests match the collective's. Generally speaking, however, it is all about the collective, about protecting the Netherlands, and its society.'* (FG 5)

In short, what the participants argue here is that the military context of soldier enhancement inherently favors the collective over the individual, while physicians in the forces have a responsibility to address the health and safety of both. What may help counter the supposed bias towards the collective in practicing soldier enhancement, according to the participants, is that military physicians generally relate to individuals personally:

> *'Are you allowed to inflict damage on an individual to protect the group?' (M) 'There is no correct answer, of course. It depends on the amount of damage inflicted on that person, and how much the group benefits, that is what you have to weigh up. Personally, if I had a patient in front of me right now, I would opt for the individual … because, with that person I have a strong doctor-patient relationship at that moment.' (P)* (FG 3)

A number of participants presented the consideration whether to harm an individual with an enhancement for the sake of the collective as if this can be equated to some sort of straightforward mechanical calculation, simply a case of weighing up the harm and the benefits, as if what is regarded as harm or benefit is not at all subject to interpretation:

> *'That is the medical consideration, how much damage can I inflict on the individual and to what extent will that benefit the collective?'* (FG 3)

Our findings, however, show a different story. Section 3.2., for instance, discussed that if military physicians want to remain effective in the relational context of their soldier enhancement situation, they will have to be able to deal successfully with many relevant actors at the same time. This can cause all kinds of moral considerations and interpretations to enter into the dilemma. Sometimes, moreover, it is hard to tell anyway, whether an enhancement serves the individual or the collective:

> *'Sometimes I prescribe painkillers to a driver who has to cover a long distance.' (P1) 'But, does that benefit the group, by making sure the journey is not cancelled, or the individual, because they want to be able to drive?' (P2)* (FG 6)

Such a lack of clarity complicates the care-providing dilemma at hand considerably, because it allows people in the relational context to question and even outline to their own needs, which and whose values are at stake – or fulfilled – with a particular enhancement.

4.2.3. Care giving versus employer role

The third dual loyalty dilemma we discuss here is one that our data demonstrates may already exist, but which to our knowledge, has not (yet) been experienced by our participants in explicit ways. This dilemma is related to the issue stated in 3.1.1., that soldier enhancement differs from many other human enhancement domains in that the employer of those to be enhanced is actively engaged in the practice, and is moreover a powerful stakeholder. Military physicians are often the ones who actually apply the enhancement. For that reason, others may perceive them as an extension of the employer rather than as a care giver. From the citation that was given in 3.1.1. it also becomes clear that our participants at times identify themselves in the employer role:

> *'It's very odd that we as an organization force people to get vaccinated. We should constantly remind ourselves just how odd this is. Our population does not realize this, because they are 18 years old, and in some cases relatively undereducated, so we need to stand up for our patients. We have to be aware that this is unusual, so as an organization, we need to think this through properly.'* (FG 3)

The care giving and employer roles are not necessarily too much at odds with each other for military physicians. Both roles bring with them a moral responsibility to take care of the individual soldier because the employer is bound – morally and in general legally – at all times to comply with the standards of good employership:

> *'As a patient or, in this particular case, an employee, you have to be able to trust the defence organization, you need to trust your employer and that whatever they give you is right.'* (FG 3)

Employers, however, at times have to deal with stakes that may not primarily serve the interests of the individual soldier. As one of the participants stated in 4.2.2.:

> *'The military serves the collective, not individuals, except for in rare cases when the individual's interests match the collective's. Generally speaking, however, it is all about the collective, about protecting the Netherlands, and its society.'* (FG 5)

When stakes start to – or appear to – diverge between the individual soldier and other actors in the web of dependency relations surrounding soldier enhancement, military physicians may well experience a dual loyalty conflict, in which the two roles can pull them in opposite directions.

4.2.4. Closing words on theme 4: Dual loyalties in soldier enhancement

The relational and other contextual aspects of soldier enhancement can clearly impose dilemmas of dual loyalty on military physicians. Whether we consider the medical-versus-military dilemma, the individual-versus-collective dilemma, or the somewhat hypothetical dilemma between the care giver and employer roles, military physicians seem to be confronted with moral obligations that inherently deflect, to a larger or lesser extent, their attention and loyalty away from their responsibility for the individual soldier. For military physicians, these dilemmas seem to be characteristic for the relational context of the soldier enhancement practice. Consequently, standards and guidelines alone, that may well be considered helpful, will ultimately not suffice as tools for military physicians to deal effectively with these care providing dilemmas.

4.3. Theme 5: Risks for ethical slippery slopes?

This chapter's final theme discusses the participants' general perspectives regarding the risk potential for military physicians in soldier enhancement for sliding down, in a moral sense, slippery slopes. One can end up in a morally unfavorable position, for instance, with a soldier enhancement, such as when harm was inflicted solely to compensate for organizational shortcomings, or an individual soldiers' rights were breached too far. One participant explicitly pointed out that social norms dictate whether a soldier enhancement is morally acceptable, and that these social norms generally emerge from the interplay of a number of relevant viewpoints, with society as an important anchor point:

> *'I guess, ultimately, the decision whether or not to apply an enhancement depends on the norms and values of the profession, based on what is accepted in society, and the enhancement's potential impact on the health and safety of the individual. A complex situation, dictated by what society still finds acceptable.'* (FG 3)

A large percentage of the participants reported recognizing the inherent risks of slipping down the ethical sliding scale in the actual practice of soldier enhancement:

> *'From time to time there may be this risk of a slippery slope, and you know what it can do to the organization, to the deployment, to the mission.'* (FG 5)

Soldier enhancement, in short, can be the reason why military physicians at times find themselves on ethical slippery slopes.

4.3.1. Risk factors

According to the participants, one major factor that can lead military physicians down the primrose path in soldier enhancement, is the inherent promise of progress that soldier enhancements bring to the battlefield. In section 3.2.1., we already addressed the attractive power that enhancements can give soldiers, according to the participants, because they can then carry more weight, think quicker, see more than others, etc. We addressed there also that for similar reasons, military commanders often commend soldier enhancements:

> *'My guess is that every commander aspires to have soldiers who endure the most, who go the furthest, and who can be deployed in the best possible ways'.* (FG 4)

Whatever achieves success, or the promise of success, you generally want more of, especially when the stakes are high. The application of one soldier enhancement may therefore easily lead to the next, and gradually to applying further-stretching ones, only to end up, possibly, in a morally

condemning situation because, as we have seen, soldier enhancements have downsides. Another reason, according to the participants, for military physicians to risk sliding down the ethical scale is that there appears to be a very thin line in soldier enhancement between, on the one hand providing medical curative support through enhancements, and on the other hand facilitating active combat by improving a soldier's capacities in the field:

> *'You prescribe pain medication, so that this soldier can keep on walking' (M) 'There is again that slippery slope, what makes something a weapon, and when is it still seen as medication?' (P)* (FG 6)

The line between right and wrong, in other words, may be hard to distinguish at times in soldier enhancement. A further complication is that the norms regarding what is morally accepted or not can gradually shift over time, and result in new norms:

> *'Every new technology that appears becomes the new norm, and the must-have, also for performance enhancement. We can now get protein shakes, a couple of years ago that was unthinkable. These days it is the norm.'* (FG 5)

The more these shifts occur gradually, the harder it is for those involved in soldier enhancement to detect the changes:

> *'You start out as a doctor with good intentions, good conduct, providing good advice, and ready to think constructively about new technology. That is noble and fine, but at some point, things can get bent … and just a little further each time, until you find yourself in a situation where you facilitate things that in hindsight you might not have wanted to.'* (FG 4)

During a lengthy conversation on the possibility of sliding down slippery slopes, one participant argued that the armed forces may actively seek new standards in this particular practice in a constant attempt to improve their members' performance:

> *'Do you think there is this risk of sliding down a slippery slope [in soldier enhancement]?*' (M) *'For me, the boundaries, they blur … the organization realizes what more can be done [with enhancements] … we see that with everything, once we know we can do it, then it has to be better, faster.'* (P) (FG 5)

Certain technologies, moreover, seem to "invite" the armed forces to stretch their people's performance, simply because they provide the data to do so:

> *'Perhaps with biomonitoring … that we look at urine and blood markers: can we push people further with this or not? …'* (P1) *'Well, there is a slippery slope here, because theoretically … you*

could also try and push the limit, let someone do more, because the numbers are okay.' (P2) (FG 4)

In the meantime, the prevention of moral disconnects in soldier enhancement may not always be the armed forces' primary concern. Management, according to one of the participants, would prefer to focus on the force's higher order goals, rather than reflect on the morality of each and every individual soldier enhancement's workings:

'The armed forces are there to defend national interests and are as such unable when things escalate, to make that call, because their goal is always to beat the opponent.' (FG 5)

It would be naïve furthermore, according to the participants, to argue that an opponent's stance and actions regarding soldier enhancement would not have any effect on your considerations and those of your other unit members about this practice:

'Are you going to adjust your usual norms and values because the opponent has different ones, making it difficult to stick to yours? On the other hand, you are not going to wait there like a sitting duck if your opponent is much stronger. These are difficult considerations.' (FG 4)

The powers at play they see as forceful:

'Military forces aim to maintain a technological advantage over their opponents. If it is known that your opponent uses a certain technology, to what extent can you avoid being forced into a situation where you feel you have to, in one way or another, employ the same technology? Can we still say we are making choices out of free will?' (FG 4)

Another powerful risk factor that can push military physicians to the limit in soldier enhancement lies in the relational practice that we addressed in section 3.2. It was pointed out there that military physicians, as far as soldier enhancement is concerned, find themselves in a web of dependency and power relations with all the other actors involved, not least the military commander. Military physicians, moreover, are supposed to fulfill many different roles in this web. In order to remain effective in all their diverse roles as a physician in this web, they have to survive socially, and uphold thereby healthy relationships with all the other actors involved. This includes dealing with all these actors' respective powers and goals accordingly. This context should be taken into account given that participants reported sometimes experiencing subtle but forceful pressures not to speak out about soldier enhancement issues with other military authorities, and to adapt their judgements:

'When on a mission, sitting there as Senior Medical Officer in a meeting with the Senior National Representative, you don't want to be that doctor that always says no. Sometimes though, that

creates the feeling that you have to give in. Then it can really get complicated, that for your own sake, for your own social survival, you do things that in fact go against your conscience.' (FG 6)

Dissenting voices, in other words, may remain silent in the relational context of soldier enhancement, and this may be even more the case in remote settings.

4.3.2. Closing words on theme 5: Mind the ethical slope

Soldier enhancement, with all the powers involved, can obviously push someone just right down the ethical sliding scale. It may be difficult for military physicians to avoid slipping down that slope. This is because they have to deal with all the drivers in the actual practice of soldier enhancement, in a context of uncertainty and stakes, and of dependency and power relations, whose powers can be subtle but also forceful.

Chapter 5

Findings – Theme 6: Considerations for ethics support to military physicians in the actual practice of soldier enhancement

Chapters 3 and 4 addressed our participants' perspectives on what actual moral issues they think may be at stake for military physicians when confronted with soldier enhancement, and what might be the underlying mechanisms. Our findings reveal that, according to the participants, many moral issues in the actual practice of soldier enhancement are a consequence of contextual issues, such as the uncertainty that is seemingly inherent in soldier enhancement, and that stakes can be high in the military. Central to our data, however, is the relational context of soldier enhancement, which apparently can cause military physicians to experience and sometimes struggle with multiple and divergent moral issues and responsibilities in soldier enhancement. The participants indicated a need for support in dealing with moral issues in soldier enhancement, also because they recognize, in all the different relationships and associated responsibilities, the moral risk of dual loyalties, and of sliding down the ethical slippery slope.

This chapter looks at what the participants expressed during the focus group discussions regarding what they consider could effectively support military physicians in dealing with moral issues. Some participants asked for clarity on a number of issues in soldier enhancement and, in line with this, a framework for prescriptive and formalist guidelines, rules and regulations. They also emphasized the importance of being supported by leadership and by their medical staff in all the decisions they have to make. They proposed, furthermore, to centralize the expertise on soldier enhancement, so that everybody knows where to input and get knowledge on this topic, and also perhaps to unify individual military physicians' judgments on soldier enhancement. According to some participants, a centralized knowledge institute could even decide on soldier enhancement issues on behalf of military physicians in the field, in order to relieve these physicians as much as possible from dual loyalty issues. The participants furthermore expressed that there is clearly an explicit need for reflection and dialogue with others on values and dilemmas that military physicians can encounter in soldier enhancement.

Providing effective ethics support to military physicians in the context of soldier enhancement seems especially important given the potential mental consequences they can suffer due to the moral issues surrounding this practice. As one participant explained:

> '*For me, integrity is being able to look at yourself in the mirror, and know you did the right thing. … I wouldn't say PTSD, that is going too far, but, if you don't do things, or do things that are not in line with your own values, you will take that with you. That is what can actually cause damage.*' (FG 1)

The issue, however, is that although the participants seem to be aware of all the relational and other contextual aspects of soldier enhancement in practice, they do not seem to fully realize what impacts and consequences these might have for building effective ethics support. Therefore, and to help readers create more effective ethics support systems for military physicians involved in soldier enhancement, each section in this chapter ends with a short discussion reflecting on the support measures mentioned in that section in light of the findings in chapters 3 and 4.

5.1. Clarity and standards

During the focus group discussions, the participants expressed several times experiencing a need for instructions and restraints in soldier enhancement, and to be supported in this way regarding their considerations on what is or is not allowed. In particular, they expressed a need for clarity and standards.

5.1.1. Clarity

As soldier enhancement is seen as being inundated with uncertainties, the participants frequently expressed a need to counter these uncertainties. In our findings so far, for instance, we have seen that the participants prefer reversible over irreversible soldier enhancements (4.1.4.), and tend to seek clarity in knowledge and science (4.1.5.). Accordingly, while actively speaking out against a structural application of soldier enhancements in exercises for the sake of the exercise, some of the participants thought it was a good idea to provide at least the possibility during exercises to try out enhancements before actual application on missions:

> *'If we now say: you may only apply soldier enhancements when they are crucial for actually turning the tide … shouldn't we look at this earlier, through trial and error, and see whether it works, rather than right at that decisive moment.' (P1) 'Otherwise it is too late' (P2)* (FG 5)

The participants also emphasized the importance of clear communication in soldier enhancement, and thus transparency. They reported valuing clarity, for instance, in the communication on goals and gains of enhancements. Towards soldiers, moreover, they value soldiers to be informed clearly about the pros and cons of soldier enhancements, the prevailing conditions under which they are allowed to apply a particular enhancement, and whether and under which conditions the armed forces may mandate enhancements:

On goals:

> *'It must be clear to everyone, what goal is to be achieved [with this enhancement]. It also has to contribute significantly to that goal.'* (FG 4)

> *'Why would you hesitate to apply enhancements if the goal is not really clear? (M) 'Because it decreases the probability for success.' (P)* (FG 5)

On gains:

> *'If the threats are sufficiently severe, I could imagine commanders ordering a particular enhancement. If the gains are dubious, the enhancement should not be enforced.'* (FG 4)

On prevailing conditions:

'Transparency, together with informed consent … that the person concerned has all the information about the enhancement, why we want it, what the downsides are, what is currently known.' (FG 2)

'I would really like to see that those to be enhanced have received clear guidelines: when is this prescription allowed, when not.' (FG 1)

On mandates:

'You can keep on top of these things by being really clear up front: if you go [on this mission], then these are the consequences. It is very hard to change the rules half way through the game. So, the choice has to be clear right from the start.' (FG 3)

The participants obviously consider that providing clarity on the various aspects of soldier enhancement is an effective means of helping military physicians deal with moral issues in practice. In connection with this, they also emphasized the value of structure and guidance, of rules and regulations, and a framework for the soldier enhancement practice.

5.1.2. Standards

The participants of one focus group especially emphasized the value of having clear boundaries within the organization between what is allowed and what is not in soldier enhancement, in order to avoid sliding down an ethical slippery slope:

'The boundaries between what is or is not allowed are easily crossed, we need crystal clear rules for that: when we have a person's consent to use a chip for temperature regulation purposes, we are not automatically allowed to measure this person's cholesterol also.' (FG 1)

In addition, the participants valued unity among military physicians in how they practice and make judgements regarding soldier enhancement:

'There must be a clear boundary, and also have everybody singing from the same hymn sheet' (FG 1)

One of the participants in this group summarized what they think clarity and rules can do for military physicians in soldier enhancement:

'As long as you can prescribe enhancements with a clear indication, within a clear and correct framework, not overstretching the limits that our body dictates, you feel you are doing things right.' (FG 1)

Participants in other focus groups seemed to agree with this in principle, but also discussed broader means to guide relevant actors' actions and activities in soldier enhancement, rather than just stipulating rules and regulations. One participant even proposed a need for guidance for military physicians on what to do when rules do not suffice:

> *'Knowing where to go to for consultation on what topic when considering operations beyond the normal.'* (FG 1)

Another participant suggested setting up some kind of checklist:

> *'For human enhancement … it would not be a bad idea to set up a standard framework, with a step-by-step plan.'* (FG 3)

They claimed that such a checklist could be used for accountability purposes, but also to help military physicians set out their arguments, with reasons for and against soldier enhancements:

> *'I am pro-checklist. With a step-by-step plan then it's covered, and you can refer back to it. … so, use it as basis to argue why a certain application is not such a good idea at this particular time.'* (FG 3)

Yet another participant proposed setting up a framework of instructions for all the hierarchical levels involved rather than a checklist just for military physicians:

> *'You have to establish a clear framework on each hierarchical level. Like with blood [transfusions in operational settings], a report is written on a policy-political level, then work instructions on how are we going to screen people, and what are all the educational requirements.'* (FG 3)

It was suggested, furthermore, that not just the military physicians and the medical staff should be provided with standards for how to deal with soldier enhancement, but also other relevant actors:

> *'Let's say, the opponent is taking stimulant drugs …and the analysis points out, we also need to prescribe stimulant drugs. Can the commander enforce that?' (P1) 'I think there should be a framework wherein the commander can make this decision initially. Options like this need to be discussed up front and in a calm environment,'* (P2) (FG 2)

Suggested in this comment, is that standards such as these can best be set up in a timely manner, so that something is available that has at least been thought through a few times before being applied in actual operations. Another participant underpinned this by pointing out that it may not be easy at all to create a guiding framework for soldier enhancement, with all the ethics involved:

'I think it will certainly be a challenge to develop this [ethics] framework for soldier enhancement. It encompasses so many issues…' (FG 1)

It was acknowledged by the participants that part of the complexity lies in the issue that military physicians, even with fixed rules and regulations and within set boundaries, require at times a certain amount of discretion, allowing them room to maneuver professionally:

'You can have all these goal posts, but then at the decisive moment, there is this last-minute risk assessment, with the commander assessing operations, and the physician's medical assessment, weighing up the individual versus the collective interests. …. Even then, as medical advisor you still have room to maneuver. … That last-minute decision might be up to you and the commander, but in order to make this work, you first have to set the goal posts.' (FG 3)

Emphasized here once more is the urgency that the participants feel to set these goal posts well before the start of any actual soldier enhancement application.

5.1.3. Reflection: On clarity and standards

What our findings highlight is that the participants consider accuracy and standards, in one way or another, an effective means for helping military physicians deal with moral issues in soldier enhancement. Clarity and standards, in short, are supposed to create order out of chaos. However, as we have repeated that the soldier enhancement practice must be considered highly contextual and relational, we do wonder whether it would be at all possible to always have the clarity that is called for in practice. Moreover, creating order can but does not necessarily resolve a moral issue or dilemma. This is because many moral issues and dilemmas emerge on account of the relational and other contextual characteristics of soldier enhancement. More clarity or better standards may then not bring better solutions per se. Rules and regulations, for instance, as well as instructional frameworks, may well be restricted in their workings because their conception, dissemination, and use are inherently subject, among other things, to the relational context. Power dynamics may therefore enter into issues such as what is regarded as clear information, or a helpful standard.

The participants seemed to be well aware of some of the limitations affecting accuracy and standards in soldier enhancement, perhaps especially the consideration of ethical issues:

'Although it can be helpful for making decisions, a framework, certainly an ethical one, it is not going to tell you what is right or wrong. It will facilitate the discussions, but then you still have to weigh up how much wrong we accept versus how much right. I think that is always going to be difficult.' (FG 3)

Clarity and standardized guidelines, in other words, the participants consider both helpful in the context of soldier enhancement. Rules and regulations may in fact be a given in this particular context. They may well function, moreover and up to a certain extent, as ethics support to military physicians as they provide something to hold on to. However, in ethics support systems, these means will probably not suffice when soldier enhancement is concerned, because the relational and other contextual characteristics of this practice may limit the extent to which they can help military physicians deal effectively with moral issues. We therefore expect that additional means are required in this practice to achieve a well-functioning ethics support system.

5.2. Guidance and management support

Our participants expressed several times during the discussions the value of being guided by the organization's leaders and medical staff in their role as military physicians, and of being supported in the decisions they have to make in the context of soldier enhancement. We will start with what the participants said on the need for getting guidance.

5.2.1. Guidance

When asked what would help military physicians deal with moral issues in soldier enhancement, one participant responded emphatically:

> *'Guidance from leaders … so that the rules are clear to everyone.'* (FG 1)

Another responded with this statement:

> *'Perhaps it would help to make some principal statements beforehand: this is what we think is still okay, this is not. I appreciate it is time-dependent, but as a starting point for discussion, we need to know: this is the medical directorate's standpoint. This is how far we will go in soldier enhancement.'* (FG 5)

Getting guidance from leaders was not often mentioned in explicit terms during the focus group discussions, yet it was frequently implied in passing. This topic, for instance, covers all the factors mentioned in section 5.1., where the need for clarity on goals and gains was addressed, as well as the suggestions about providing a framework for dealing with soldier enhancement. The participants, in short, think that getting guidance and principles from the hierarchical levels above them, be it in the operational or specialist line, can support military physicians in dealing with moral issues in soldier enhancement. Timely deliberation was emphasized by the participants, like with the development of standards in the previous section:

> *'One way or another we should think this through up front: what are the downsides, how do we think we should handle this.'* (FG 3)

The participants emphasized, in other words, the importance of not only setting up frameworks for soldier enhancement in a timely matter, but also that ideas on how to deal in a broader sense with all kinds of moral and non-moral issues in soldier enhancement should be well thought through beforehand.

5.2.2. Management support

Soldier enhancement, as we have seen in chapter 3, can be regarded as an essentially uncertain practice that often takes place in remote settings, where the final decisions are a matter of relational

interplay between the military physician and the unit's other relevant staff members, among them the commander. As pointed out in 3.2.2, the military physician is allowed to act as the medical authority in this process. It is therefore hardly surprising, that the participants find management support, especially from their own discipline, can be a meaningful and powerful tool for helping military physicians deal with moral issues in soldier enhancement:

> *'To me it is important, getting backup within the discipline, being able to interact with others or doctors as a sounding board … feeling supported by your leaders in the decisions you make.'* (FG 6)

Another participant put it this way:

> *'To have unconditional support in the medical line … I mean, it is inevitable, once in a while, that some operational people will want to go in different directions… but I know that my chief medical officer will support me.'* (FG 5)

The participants, obviously, consider management support, especially from within their own discipline and preferably provided unconditionally, as an important ethics support tool for military physicians involved in soldier enhancement.

5.2.3. Reflection: On guidance and management support

The reflection in 5.1.3. on accuracy and standards is also valid, in a sense, for what is dealt with in the first part of this section, the issue of getting guidance from leaders. Guidance and principles, like clarity, are important in soldier enhancement, necessary means even perhaps, but have to be conceived, provided, received, interpreted, and put into practice. All these processes might suffer from all kinds of disturbances given that they are situated in the relational and other contexts of the soldier enhancement practice, from which many moral issues tend to emerge. The development of management support may suffer from similar dynamics and may therefore well remain absent.

5.3. Centralization of expertise

One theme that emerged several times and throughout the various focus groups when the participants were asked about their views on ethics support for military physicians in soldier enhancement, is the centralization of expertise. When asked what would help them as military physician to deal with moral issues in soldier enhancement, one participant immediately responded:

> *'A clear point of contact. … to be able to go to this unit with experts, to ask how it works, what risks they identified during their research.'* (FG 1)

Another participant felt it was necessary to have a think tank for soldier enhancement, to help ensure that all the relevant actor groups are on board when making important decisions:

> *'If we had involved everyone in the discussion on the covid vaccine, we would now have much more clarity. I guess I would like to see that with soldier enhancement, I am not sure in what form, but we need to have a think tank, or a committee.'* (FG 3)

Some participants emphasized that such a think tank should include multiple disciplines:

> *'If the armed forces really want to proceed with this, we should have a separate department focused on soldier enhancement issues, with representatives of diverse disciplines, such as an ethicist, a physician, an operational commander, and a legal advisor, who can all give advice based on their own field of expertise.'* (FG 3)

One participant proposed taking up mandatory consultation with experts regarding certain moral issues in the earlier mentioned checklist (5.1.2.):

> *'That [whether or not to enforce vaccination] is an issue for which the checklist would mandate consultation with certain experts, to clarify the issue with them before you can proceed with the process.'* (FG 3)

One participant recommended the centralization of expertise because of the fact that the Dutch armed forces are still in the early stages of considering adopting soldier enhancement, after which another colleague immediately commented that without centralization, each commander could do their own thing, without being regulated:

> *'Knowing there are people willing us to proceed with soldier enhancement. If they really want it, great, but then also get the people and the means to investigate this. Otherwise, it will cost a lot of effort, but without any lasting effect. … This has currently not been established in the organization, so, set up an agency that has soldier enhancement as its main focus.' (P1) 'Exactly, because otherwise it will depend on the individual commander to decide whether or not the*

physician should prescribe modafinil, … and you might be denied potentially good projects.' (P2) (FG 3)

Thus, according to the participants, centralization of expertise on soldier enhancement can help individual physicians get knowledge on the topic, serve as some kind of gateway to pass through, and help orchestrate soldier enhancement practices throughout the organization. Another reason they mentioned for recommending centralizing expertise concerns the dual nature of many soldier enhancements. Despite their medical aspects, soldier enhancements are all primarily military means. In section 4.3., we addressed that regarding slippery slopes, there may be a thin line between what is considered a weapon and what is medication, and in 4.2.1., we discussed the dual loyalty conflict that can arise as a consequence of being a medic and a military at the same time. What we underline here is that the dual nature of soldier enhancement, especially in the field, can confront military physicians with yet another moral conflict in the sense that their activities in soldier enhancement may threaten their protected and neutral position as a medic as set out in the Geneva Conventions. For this reason, one participant argued for a strict disconnect between these two roles:

'Would you feel different, if you had to make that decision as a doctor in that centralized institution rather than as a doctor in the field?' (P1) 'I guess it would make me feel better yes, at least because of the neutral role that we are supposed to have on a mission. … We belong to the unit, but as doctors we are supposed to be impartial. That is why I think the doctor in the field should not be left to make these decisions. This is something we want to centralize back home, to relieve the advanced medical chain from dilemmas such as… "by prescribing these types of enhancements, to what extent does this turn me into an active combatant?"' (P2) (FG 1)

Here, the second participant is making the case for preventing military physicians in the field from having to make decisions on military rather than medical aspects, by relieving them of any decision on soldier enhancement, and leaving such decisions down to colleague-military physicians away from the field.

5.3.1. Reflection: On centralization of expertise

The participants clearly value the centralization of expertise as an important tool to help them deal with moral issues in soldier enhancement and we certainly do not want to dispute its potential value in, for instance, unifying military physicians' judgements on soldier enhancement. As with the clarity, standards, and guidance factors mentioned in 5.1. and 5.2., we want to underline that when considering the actual practice of soldier enhancement, with all its relational and other contextual aspects, the centralization of expertise may be constrained in its impact as ethics support.

Knowledge and unified judgment, for instance, may not be particularly effective per se in helping individual physicians decide what to do in a relational context. Imposing an arbitrary line between what to regard as medical or military may perhaps allow compliance with the Geneva Conventions. However, it does not relieve military physicians of the moral obligations and related dilemmas that they, as a military and, when applicable, a member of a military unit, may experience and have to cope with. The centralization of expertise might not in fact relieve military physicians from many of the moral issues identified in this study. This is because the military physicians dealing with soldier enhancement remain situated in this earlier discussed complex web of dependency and power relations where many of the practice's moral issues arise. Effective ethics support for military physicians in the context of soldier enhancement therefore needs to enable these physicians to address and discuss how these dependency and power relations may relate to how they can deal in this practice with moral issues.

5.4. Dialogue and deliberation

So far, this chapter has discussed prescriptive measures (standards, rules, regulations), control-oriented measures (clarity, guidance, and centralization), and also management support. The participants proposed these as a means of ethics support for military physicians in soldier enhancement. Apart from these measures, the participants frequently mentioned the value of being able to openly discuss moral issues in soldier enhancement with other actors, and to deliberate with these actors over possible pathways. We think we can best illustrate this with data from several focus group discussions. During one of them, the moderator asked the participants what military physicians would need in order to avoid veering off the moral path in soldier enhancement. Their response emphasizes the value of being able to discuss soldier enhancement issues with colleague-physicians:

> *'What could help you keep your moral compass on track?' (M) 'Interaction with colleagues?' (P1) 'You just have to talk to each other about it, feedback, and what I said: … you hope that you get support. Is it right to have doubts? I think we always do, and so we try to keep in contact with each other … I do that, and I hope everyone else does too, but I don't have a clue if that is the case.' (P2)* (FG 5)

In another discussion, nurses were included as a valuable resource:

> *'What would help you to deal responsibly with soldier enhancement?' (M) 'Peer consultation, or with nurses. I have always benefited from that.' (P)* (FG 6)

One participant proposed to ensure a network of medical experts that is able to support military physicians on soldier enhancement issues and allows discussions and the exchange of experiences, rather than to solely have the medical directorate issuing principal statements:

> *'That would be top-down …. asking the medical directorate to state: "This is how we do it," so I can stick to that. I think we should be willing to have a discussion, like, am I behind this, is this precisely the message I want to hear?' (P1) 'The medical directorate is high up and far away, so a step in between is important, you shouldn't feel you are on your own in the field, or at sea, or that you have to decide on all sorts of issues in splendid isolation. You need to know that there is this network around you, and you can backbench with them: "Have I missed anything, who has any tips or tricks, other experiences?"' (P2)* (FG 5)

The participants thus emphasized that they think military physicians could benefit from ethics support that allows them to discuss and deliberate, preferably with a network of medical experts, over issues in the actual practice of soldier enhancement. In 5.3., on the centralization of expertise,

the participants proposed to set up a think tank with more than just the medical discipline. Such an interdisciplinary perspective would of course also be possible in their ethics support instruments directed at dialogue and deliberation. Some participants seemed to propose just that, to set up a dialogue and deliberate over moral issues in soldier enhancement with other disciplines, in order to help military physicians, among other things, avoid sliding down slippery slopes:

> *'It is important to have critical people in the organization, perhaps a civilian sounding board with people in other professions … they don't have to be doctors.' (P1) 'Discuss the rules of engagement, and calibrating that norm every time, that is important … "What does that norm mean, how does it work out, what are the rules, how can we make sure we stick to them?" … To avoid reaching a point where we say: "We've been here long enough, we're done, let's cross these boundaries." There always has to be someone to remind you: "This was the norm, this is what we all agreed."' (P2)* (FG 4)

The issue, however, with what is proposed here in this particular comment is that although the recurrent calibration suggests a sense of deliberation, it still holds a strong focus on norms and rules. This reveals that what is proposed here has more of a legal connotation rather than that it is actually directed at a dialogue and deliberation of moral issues in soldier enhancement. We did find one instance though, when the participants explicitly but still carefully expressed the value of interdisciplinary dialogue and deliberation on moral issues in soldier enhancement:

> *'Everyone, especially the commander, should know and accept that this is the military physician's responsibility.' (P1) 'On the one hand I think we have to be firm about that, but on the other hand, we could also take the soft approach, have something like a moral deliberation with a commander' (P2)* (FG 6)

However, the number of times such interdisciplinary dialogue and deliberation were actually addressed throughout the focus group discussions on moral issues in soldier enhancement, combined with the absence of any scope beyond including the commander, suggest that it is currently not yet commonplace for military physicians to have an actual interdisciplinary perspective regarding dialogue and deliberation on soldier enhancement.

5.4.1. Reflection: On dialogue and deliberation

The first three sections of this chapter reiterated that the ethics support measures proposed in these sections are bound in their workings due to the relational and other contextual aspects of the actual soldier enhancement practice, and therefore need to be supplemented with tools that are more capable of handling the complexity involved.

Tools based on dialogue and deliberation such as peer consultation, joint reflective dialogue, and moral case deliberation, seem good candidates for this because these kinds of tools are supposed to encourage a constant alertness to relational dynamics in context (Weidema et al., 2011). Only with such a focus, can we concentrate in a meaningful and helpful way on the associated moral and responsibility issues, such as: “Who is to decide in the first place whether something may or must be regarded as knowledge, misuse, or an operational necessity in the actual soldier enhancement practice?” or “How can military physicians survive socially and still deal responsibly with dual loyalty conflicts, or with conflicting values and interests of actors regarding, for instance, free will in this relational context with its multiple moral responsibilities for military physicians?” and “How are we going to deal with military physicians who have slipped off the ethical sliding scale?”

Our findings show that dialogue and deliberation seem to be valued by military physicians regarding moral issues in soldier enhancement. The focus so far though, seems to have been on dialogue with experts from the medical profession, rather than to organize this in any systemic way with other relevant stakeholders and disciplines.


Mediacentrum Defensie

Chapter 6

Discussion

This study aimed to improve our understanding of the moral issues involved in soldier enhancement by studying the thoughts and perspectives of military physicians on what they regard as actual moral issues in this practice. Focus groups were arranged with 28 military physicians serving in operational roles within the Dutch armed forces. From our findings we identified six themes. The first five themes all dealt with what moral issues the participants think are actually at stake for military physicians in the actual practice of soldier enhancement. Although these first five themes were presented as separate entities, they are all inter-related. The sixth theme dealt with what the participants think can support military physicians when dealing with the moral issues they may face in the actual practice of soldier enhancement.

Our findings show that dealing responsibly with soldier enhancement in practice requires military physicians to consider various actors' different values and interests, bioethical principles such as doing no harm and bodily integrity, and other normative frameworks such as IHL. Above all, they need to do so in situations characterized by uncertainties, a relational context and, at times, high stakes. The relational context and its associated responsibilities are in fact central throughout our data. Military physicians are situated in this practice within an interconnected web of dependency and power relations that appears to often generate diverging moral responsibilities for them, especially in remote settings. Military physicians feel responsible in this practice, for protecting both the individual soldier and the unit's health and safety, while final decisions on soldier enhancement are a matter of relational interplay with relevant staff members, among which the commander. Consequently, as we have seen, military physicians at times tend to struggle with values in the soldier enhancement practice, they experience dual loyalties, and they run the risk of sliding down ethical slopes. Meanwhile, they need to survive socially, in order to remain effective as a physician fulfilling multiple roles in this context.

This discussion addresses how our findings contribute to debates concerning the ethics of soldier enhancement for military physicians. We also look at the practical implications of our findings with regard to military physicians' requirements for dealing responsibly with moral issues in soldier enhancement. In addition, we highlight areas for further research.

6.1. Soldier enhancement: a care ethics perspective

In the introduction we addressed that debates on the ethics of soldier enhancement appear to be dominated by abstract and theoretical perspectives (Cribb, 2010), mostly principlist, deontological, and utilitarian (Gross, 2004; Beard et al., 2016; Girling et al., 2017; Messelken, 2019). Our findings illustrate, however, that a military physician's thoughts, experiences, and decision-making processes in the actual practice of soldier enhancement are not just influenced by individual, but also by relational and other contextual elements. Physicians require considerable skills and acuity in sifting through the complexities involved, which include information and dependency relationships. The skills and insight required also go beyond abstract rules or moral principles.

Classic principlist, deontological and utilitarian ethical perspectives belong to traditional normative ethical theory (Lloyd & Hansen, 2003) that aims to distinguish sharply between right and wrong, and to address what is considered, from these kinds of perspectives, the ultimate standard human behavior. These types of approaches to ethics are obligation based, underpinned by generalizable standards, and include an ontology of the person (having to achieve this ultimate standard) who is independent and autonomous, i.e., disconnected from context (Miller, 2005; Driver, 2007). Modern ethical normative thinking, conversely, holds similar sets of moral norms as traditional normative ethical thinkers, but does not reason from some universal context (e.g. Bonhemberger & De Oliveira, 2019). One such approach, care ethics, is relevant for our study. In care ethics, which has evolved into an interdisciplinary and international theory of care (Hamington & Flower, 2021), the starting point of morality is the relational involvement with others. The conceptual core of care ethics is the viewpoint that dependency relationships generate responsibilities (Collins, 2015). Morality, in short, is thoroughly interpersonal in care ethics; it involves interaction with others, all embedded in a set of social institutions, structures, and relationships (Tronto, 2020). In the words of Margaret Walker:

> "Our (narratives), moral and otherwise, are produced by and in histories of specific relationships, and those connections to others that invite and bind us are themselves the expression of some things we value." (Walker, 2007, p. 119)

"Responsibility for others" is the moral presupposition in care ethics, because the care giver is already involved with these others, not separated from them (Edwards, 2009). Care ethics, in other words, acknowledges the messiness and the relational aspects of the actual practice, with its many actors, values, and risks that all are interdependent and have to be balanced somehow. It is considered an empirically grounded way of doing ethics (Van Nistelrooij et al., 2014; Gómez-Virseda, 2020).

The perspectives and experiences of our participants, who emphasized so often the relational and other contextual aspects of the actual practice of soldier enhancement, seem to match care ethics rather than a principlist, deontological, or utilitarian ethical approach. Military physicians, as we have seen, are situated, especially in operational practice, in a complex web of dependency and power relations, together with military commanders and others. Accordingly, they have to deal with many different and possibly diverging moral responsibilities, often in relatively isolated settings where ethical slippery slopes are lurking. A well-suited moral question for military physicians in these kinds of settings is not so much "what am I supposed to do, in terms of obligations," which would best fit a traditional normative ethical perspective, but rather a question from a care ethics perspective: "how can I best meet my multiple responsibilities of care?" This relational perspective has significant implications for what is to be considered effective ethics support in soldier enhancement.

6.2. An example: ethics support and dual loyalty dilemmas

A typical relational dilemma that came to light in our data is the dual loyalty dilemma as it is related to a well-addressed phenomenon in the medical sector, which defines it as "a clinical role conflict between professional duties to a patient and obligations, expressed or implied, [and] the interests of a third party such as an employer, an insurer, or the state" (Pont et al., 2012, p. 475). An often-addressed dual loyalty issue in the military ethics literature is the medical-military dilemma, which military medical professionals can experience from being a medic and a military at the same time. We found this dilemma in our data (see 4.2.), together with two others: the individual versus collective dilemma, and the care giver versus employer dilemma.

From an empirical care ethics perspective, dual loyalty dilemmas are an inherent part of actual medical practice, and thus also of soldier enhancement activities:

> "Although the physician–patient relationship is often conceptualized as an isolated, pure dyad, the relationship is, in reality, subjected to a number of interests emanating from a variety of different parties on an ongoing basis." (Atkinson, 2019)

This physician–patient relationship may be challenged especially in soldier enhancement, because, unlike in many other human enhancement domains as we pointed out in 3.1.1. and 4.2.3., the employer of those to be enhanced is actively engaged in soldier enhancement, as a powerful stakeholder. We think that dealing with dual loyalty dilemmas, in the different forms it can take in soldier enhancement, should be an integral part of ethics support for military physicians. Our data namely points out that this type of dilemma, especially due to the military connotation, can impose a significant burden on military physicians.

Current ethics support for dual loyalty issues in the Dutch armed forces seems to primarily emphasize, with some sense of rigidness, military physicians' divergent obligations. On the one hand, military physicians have to avoid becoming too military, and to comply with the Geneva conventions. On the other hand, they are supposed to embrace military values up to a certain point, because they have to comply with the military oath. Military physicians are not actively trained in how to deal with value conflicts that may arise from this inherent role conflict. They lack adequate ethics support, in other words, on how to actually deal with these issues in the relational and otherwise contextual context of a soldier enhancement situation.

6.3. Towards ethics support in soldier enhancement

Our finding that the participants' perspectives and experiences tend to be consistent with care ethics rather than with traditional normative ethical perspectives, has practical implications for what a framework for ethics support in soldier enhancement should look like for military physicians. Such an ethical framework should, of course, primarily be effective in supporting physicians on how to deal with the moral issues confronting them in the messiness of the actual practice of soldier enhancement. Important in this regard is that, in the words of Collins (2015), "our relations with particular others … seem to be an irreducible part of [our] moral justification and deliberation" and that "principles – understood as conditionals ('if X, then Y' statements) with an imperative ('do this') consequence – are at best insufficient, and at worst distortive, for proper moral justification and deliberation." Principles and other normative frameworks, in short, can be at odds with contextualization and maintaining relations. This is what we saw in 3.2.3. for instance, where emotions took over the discussion between participants when one of them brought up aspects of IHL. Military medical authorities nevertheless often rely on static rules and regulations to clarify how professionals ought to act and respond to moral situations (e.g. Thomas et al., 2020). Our participants were referring to similar means (5.1., 5.2.) when they called for clarity and transparency on a number of issues, standards, and management directions. They proposed, furthermore, to establish a think tank on soldier enhancement, where knowledge could be centralized, or which could function as a critical advisory board. Most of these instruments clearly aim to achieve the ideal prescription and control.

The participants also proposed less instrumental forms of ethics support that would be a better fit with the relational context of soldier enhancement. They mentioned the need for management support, for instance, and for measures aimed at dialogue and deliberation on moral issues in soldier enhancement, such as having a sounding board, and being able to interact with a network of colleague-military physicians away from the field. Methods for ethics support based on dialogue and

deliberation, such as moral case deliberation (MCD), ethics rounds, and reflection groups, are well established in civilian healthcare settings (Porz et al., 2011; Inguaggiato et al., 2019; Hartman et al., 2020). Hermeneutic ethics, on which these instruments are often based, aims to articulate and explore the various, sometimes conflicting, perspectives of the actors involved on morally complex situations (Widdershoven et al., 2009). Sessions can be held among specialists, or guided by a trained facilitator, whose role is to help participants learn "from experience through dialogue with others" (Abma et al. 2010, p. 244). Research indicates that these forms of ethics support can foster joint reflection on moral issues among professionals, to facilitate openness, understanding and transparency, and to nurture moral learning (Weidema et al., 2013; Haan et al., 2018). Healthcare professionals, for instance, reported in a study that moral case deliberation enhanced their moral skills, such as the ability to postpone moral judgments (Molewijk, 2008), which "encourages people to engage in a dialogue and to be curious about others' opinions instead of aiming to convince each other" (Hartman et al., 2020). Participants in another study reported that, especially regarding complex cases, moral case deliberation reduced their moral burden and that, through the sharing of experiences and opinions, participants felt more connected to each other (Haan et al., 2018).

6.4. Further research

This study discusses that soldier enhancement, with its complex and inherent relational context, fits a care ethics rather than a traditional normative ethics perspective, and that this has practical implications for what an effective framework for ethics support should look like in this practice. Ethics support based on dialogue and deliberation is proposed here as an effective ethics support means for this particular context. There are many different dialogical tools though, that all differ in focus and background. Further study is needed to find out what dialogical ethics support tool(s) would best fit the military physicians' soldier enhancement context, as well as the requisite conditions. Some scholars, for instance, argue that dialogical ethics support tools presuppose participants' moral knowledge (Widdershoven et al., 2009), and require practical training (e.g. Inaguaggiate, 2019).

Our data shows that normative principles, such as doing no harm, and respect for a soldier's bodily integrity, remain part of the narratives and concerns of our participants, also when they reflect on relational and other contextual aspects. This is consistent with modern ethical thinking. A study on the dialogical instrument MCD in a general medical practice, for instance, shows that especially in everyday care, principle-based and relational-oriented ethics complement each other (Heidenreich et al., 2018). Rules and regulations, like accuracy and standards, are important in contexts such as soldier enhancement. Dialogical ethics support tools should therefore not be considered as replacing

normative means, but as adding to them. Further research on the ethical framework for soldier enhancement should be directed at how to combine traditional normative and dialogical approaches and instruments into an effective ethics support system.

The aforementioned study on MCD highlights that healthcare professionals tend to experience ethical conflicts in everyday practice between principle-based professional reasoning on the one hand, and their relation-oriented reflections on the other, such as when taking into account the values and beliefs of patients and their families (Heidenreich et al., 2018). Our participants likewise tended to struggle with bioethical values and other normative frameworks. Dialogical ethics support tools can help in combining principle-based reasoning and relational-oriented ethics as these kinds of tools allow constructive discussions on normative frameworks as an inherent part of analyzing the case at hand (Inguaggiato et al., 2019; Stolper et al., 2016). Normative frameworks are not seen as the starting point for this, nor are they used as the final epistemological or normative arbiter in judgments on moral issues (Stolper et al., 2016). Grounded – generally – in hermeneutics, dialogical tools instead start with the participants' real-life experience (Widdershoven et al., 2009), with a concrete situation, or moral dilemma. From there, they help participants to make normative frameworks explicit, and to re-interpret these frameworks from one situation to another. The issue, however, is that how to determine the quality of deliberation within dialogical ethics support tools remains understudied, specifically with regard to the inclusion (and interpretation of) principles and norms, (Jellema et al., 2017; Van Baarle et al., 2019). Very little literature seems to exist on the best way to deliberately and explicitly facilitate and address the interpretation of rules and regulations in a relational context. The question remains therefore, whether relevant normative frameworks are actually and adequately addressed and interpreted with these dialogical ethics support means, how the tools actually do this, and the potential effects. Further studies are therefore needed, in general, but also context-specifically, on how to effectively support military physicians in combining principle-based reasoning and relational-oriented ethics, and how to effectively integrate and facilitate discussions specifically on normative frameworks in dialogical ethics support tools.

This current study is a first attempt to explore what an ethical framework for soldier enhancement in the Dutch armed forces, i.e. its ethics support system, should look like. For practical reasons, we have deliberately limited this study to the medical perspective, and within that, to the experiences and perspectives of military physicians in operational roles. Further explorations should include the experiences and perspectives of members from other disciplines. This is regardless of whether the aim is to develop an ethics support system for the armed forces in general, or for military physicians specifically, because in relational contexts, as we have seen, the viewpoints and experiences of one actor (group) inherently relate to those of others.

Chapter 7

Conclusion

In 2018, the Dutch Defence and Industry Strategy included soldier enhancement as a priority technological area for the first time. A motion was subsequently adopted by Parliament, requesting the Government to develop a judicial-ethical framework for soldier enhancement in the armed forces. This study reports on an initial research effort for developing the ethical part of the soldier enhancement framework.

This study focused on military physicians in operational roles, because they are the ones who are expected, especially in operational practice, to help decide on soldier enhancements, and apply many of them. As a first and major step when planning to build an ethical framework for use in practice, this research aimed to improve our understanding of the moral issues that military physicians consider at stake for them in the actual context of soldier enhancement. The findings illustrate that dealing with soldier enhancement can be challenging for military physicians because of the contextual difficulties involved. First of all, these concern the uncertainties inherent to the practice, together with the stakes that can be high in military operations. Central in our data though, is the relational aspect of soldier enhancement, how because of this, military physicians tend to experience multiple and divergent moral issues, responsibilities, and obligations.

Military physicians generally have to adhere to frameworks that are descended directly from traditional normative ethics. For instance, they have to comply with the many rules and regulations of their profession, to IHL, and they are often bound by codes of conduct and bioethical principles such as doing no harm. The perspectives and experiences of our participants regarding soldier enhancement, however, seem to match a care ethical approach rather than a normative stance. As a care ethical approach is fundamentally relational-oriented, those creating ethical frameworks for soldier enhancement should explicitly consider including dialogical ethics support. Further study is needed though, regarding such an inclusion, in order to be able to achieve an ethics support system that combines principle-based reasoning and relational-oriented ethics in a way that supports military physicians effectively when dealing with the moral issues they face in the complex relational practices such as soldier enhancement.

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Annex – Data structure