Clinical Decision Support System for the Use of Guidelines in Childhood Cancer Survivorship Care: Preferences of Healthcare Professionals and Options for Implementation

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Preface

This thesis is written as the graduation assignment for my master's degree of the study Health Sciences with a specialisation in the field of Optimizing Healthcare Processes at the University of Twente. The Princess Máxima Centre in Utrecht offered me a place where I could apply my study to practice. I was able to work for childhood cancer survivorship care, which is a valuable field in healthcare that deserves attention and continuous improvements. Over there, I got the opportunity to conduct my own research, in which I worked on the design and implementation options of a system that can improve survivorship care.

First, I would like to thank my committee members, each of whom has provided patient advice and guidance throughout the research process. And second, I would like to thank my family, friends and boyfriend, who supported me with much appreciation and understanding during my graduation period.

I hope you will enjoy reading my thesis! Thank you for your time.

Maartje Vriens

Abstract

Background Improved childhood cancer survival rates are accompanied by a majority of survivors suffering from treatment-related complications. A clinical decision support system (CDSS) has the potential to ensure that survivors receive the care they need for those complications, as patient-specific guideline recommendations can be automatically generated for the care provider. Currently, no CDSS is used for childhood cancer survivorship care. For successful implementation of a CDSS, it is important to investigate the preferences of healthcare professionals regarding the design and their perceived benefits and barriers of using a CDSS.

Aim This study aimed to (1) establish the preferences of healthcare professionals on the inclusion and presentation of guideline elements in a CDSS, (2) identify the perceived benefits and barriers of using a CDSS among care providers, and (3) explore how a CDSS can be implemented in childhood cancer survivorship care. Methods Interviews were conducted with eleven healthcare professionals. A semi-structured interview scheme and mock-ups with presentations of varying guideline elements were used during the interviews. The interview transcripts were analysed by developing an analytical framework that illustrated the data per study objective. **Results** Healthcare professionals largely agreed upon the inclusion of the following seven guideline elements in a CDSS: rationale, diagnostics, explanation of diagnostics, health education and advice, topic healthy lifestyle, overview with all elements of one topic as figure, and uncertainty of topics that potentially apply to the survivor. From those elements, the diagnostics and the topic healthy lifestyle should always be shown in a table, and the other guideline elements should be made easily accessible via pop-ups. Perceived benefits of healthcare professionals of using a CDSS included the easy access to background knowledge, the provision of up-to-date care, the facilitation of consult preparation, the provision of consistent care, time savings, being less prone to medical errors, and the facilitation of patient participation. Perceived barriers that can impede healthcare professionals from using a CDSS were the increased dependency on technology, the difficulty to access, the undermining of clinical competence, and the question of responsibility if a CDSS provides incorrect recommendations. Identified preconditions for the CDSS design that should be fulfilled for successful implementation included a CDSS that is usable for all care providers, no actions required to use, the integration with other systems, a minimal required change in way of working, the ability to note information, and the inclusion of up-to-date guidelines. Identified preconditions for the clinical practice in which a CDSS will be implemented were the care provider engagement to a CDSS, the presence of technical support if any problems arise with a CDSS, and a database with complete and correct patient data.

Conclusion The created overviews with the preferences of healthcare professionals on the design, benefits, barriers, and preconditions of a CDSS can be used to inform future CDSS development, as the gained insights can be incorporated into the design and implementation process. This study contains the first steps towards the optimal design and implementation of a CDSS, but future efforts are needed to realise the optimal CDSS for childhood cancer survivorship care.

Keywords Clinical decision support system, childhood cancer survivorship care, implementation, benefits, barriers

1. Introduction

Advances in the treatment of childhood cancer have contributed to improved survival rates¹. However, the improved prognosis has been accompanied by 75% of those survivors experiencing treatment-related complications². Those late adverse effects contribute to an increased risk of dysfunctioning organs, chronic diseases, and psychosocial complaints³. Long-term follow-up care can prevent the adverse health outcomes, monitor the presence of late effects, facilitate early diagnosis, initiate timely interventions, and refer patients to other departments where late effects can be treated if any are experienced^{3,4}.

To enable that long-term follow-up care can be provided in a structured and evidence-based way, clinical practice guidelines have been developed^{5,6}. Those guidelines consist of information and recommendations on beneficial care practices and can be used to improve the quality of care, reduce the variability of provided care, reduce healthcare costs, and promote efficient and effective care^{5–7}. However, due to the high volume of available information in the guidelines, abstracting all relevant healthcare information and recommendations per patient is a complex and time-consuming process^{8,9}. As a result, there is a lack of familiarity and low adherence to clinical practice guidelines by healthcare professionals^{6–9}.

One way to increase the usability of clinical practice guidelines is by the use of a clinical decision support system (CDSS)^{7,10}. Based on individual patient data from a database and health information from the guidelines, a CDSS can generate patient-specific guideline recommendations for the care provider. Consequently, using the guidelines becomes less complex for the healthcare professional, as all information needed for making a clinical decision is abstracted from the guidelines by a CDSS⁷. Studies have found increased guideline adherence by healthcare professionals when using a CDSS, as compared to using merely paper-based guidelines^{7,10}. However, studies have also shown that healthcare professionals do not use a CDSS in such a way that the full potential is realised^{10,11}.

Successful uptake of a CDSS in daily clinical practice can be obtained by ensuring the system is compatible with the way of working and thinking of healthcare professionals¹². This compatibility can be obtained when five aspects of a CDSS are fitting the intended use: (1) the information in a CDSS, (2) the person to which a CDSS is presented, (3) the format of a CDSS, (4) the platform through which a CDSS is presented, and (5) the user's workflow in which a CDSS fits^{12–14}. Frequently, the person and the platform are determined before the CDSS is designed^{13,14}. However, establishing how and when the information from the guidelines should be presented to the healthcare professionals can be challenging as this information and recommendations can be presented, priorities need to be made. The optimal presentation of the guidelines in a CDSS depends on the specific clinical setting, as care practices and essential information vary per setting^{13,14}. Therefore, when implementing a CDSS, insights have to be gained into the way of working and thinking of healthcare professionals operating in the specific clinical setting^{10,12,13}.

Currently, no CDSS is used among healthcare professionals in the long-term follow-up care of childhood cancer survivors, implying a possibility to improve the quality of survivorship care. The Dutch long-term follow-up guidelines for childhood cancer survivors consist of information and recommendations on no less than forty-five healthcare topics, as survivors can experience many different late effects^{5,15}. Multiple topics from the guidelines are applicable per survivor due to received treatments. Examples of those topics include pulmonal problems, hearing problems, alopecia, and secondary tumours. For each topic, seven elements from the guidelines can be abstracted, including (1) rationale, (2) diagnostics, (3) explanation diagnostics, (4) questions medical history, (5) health education and advice, (6) other health abnormalities, and (7) actions if

health abnormalities are found. In addition, three extra guideline elements can be abstracted: (8) overview with all elements of one topic as figure, (9) uncertainty potential topics, and (10) topics chronic pain and healthy lifestyle. All guideline elements are summarised with a clarification in Table 1.

Table 1

Elements that can be abstracted from the guidelines with a clarification

	Guideline elements	Clarification
Elements per topic	Rationale	Which cancer treatments lead to the provision of that particular guideline topic by a CDSS
	Diagnostics	Recommendations on what diagnostics should be applied to the survivor
	Explanation diagnostics	Additional information about the diagnostics
	Questions medical history	Recommendations on questions about the survivor's personal medical
		history that should be asked to the survivor
	Health education and advice	Recommendations on health education and advice that should be provided
		to the survivor
	Other health abnormalities	What other health abnormalities than the guideline topic can occur to the
		survivor
	Actions if health abnormalities are	Recommendations on what actions should be performed to the survivor if
	found	other health abnormalities are found
Other elements	Overview with all elements of one	Overview with all guideline elements of the specific topic as a figure of
	topic as figure	how it is presented in the paper-based guidelines
	Uncertainty potential topics	Possible presence of uncertainty about whether a topic is applicable to the
		survivor due to incomplete patient data, for example uncertainty on what
		position the survivor received radiation
	Topics chronic pain and healthy	Information and recommendations on two topics from the guidelines that
	lifestyle	should constantly be monitored in all survivors

Abstracting all available guideline elements and all topics that apply to the survivor will lead to an extensive list of health information and recommendations that can be shown in a CDSS, so priorities need to be made on what to include. However, what elements from the guidelines are relevant for the care providers, and therefore should be accessible in a CDSS, is unknown. In addition, the perspective on a CDSS of healthcare professionals working in childhood cancer survivorship care is unfamiliar, as no studies have been conducted that explored their perspective. Benefits of using a CDSS of healthcare professionals from other clinical settings include an improved quality of provided care and the reduction of prescribing errors¹⁶. Barriers of using a CDSS are the system's difficulty in defining a complex clinical situation by algorithms and the difficulty to include up-to-date evidence-based information in a CDSS¹⁷. However, it is unknown whether those benefits and barriers also exist among healthcare professionals in childhood cancer survivorship. By examining the perceived benefits and barriers of using a CDSS among those care providers, insights can be obtained into their attitudes and perspective of a CDSS. Moreover, preconditions of a CDSS can be identified that need to be fulfilled to facilitate the implementation of a CDSS in childhood cancer survivorship.

Although studies have examined the development and implementation of a CDSS for other clinical settings, these fall short in survivorship care as a majority of the studies focus on CDSSs that only provide medication recommendations^{11,13}. Yet, the guidelines for the follow-up care for childhood cancer are much more comprehensive than solely medication use^{5,15}. Some studies did examine the development of a CDSS for childhood cancer survivorship care, but those studies focused on currently outdated guidelines and never implemented the system in daily clinical practice^{18,19}. Therefore, it remains unknown how the information and recommendations from the guidelines should be presented in a CDSS for healthcare professionals for childhood cancer survivorship care, and how such a system should be implemented in daily clinical practice.

In this study, we tried to answer the following research question:

How should a CDSS for healthcare professionals be designed and implemented in childhood cancer survivorship care?

In order to answer the main research question, three sub-questions were formulated:

(1) What are the preferences of healthcare professionals on the inclusion and presentation of the guideline elements (rationale, diagnostics, explanation diagnostics, questions medical history, health education and advice, other health abnormalities, actions if health abnormalities are found, overview with all elements of one topic as figure, uncertainty potential topics, chronic pain and healthy lifestyle) from the Dutch long-term follow-up guidelines for childhood cancer in a CDSS for healthcare professionals?

(2) What are the perceived benefits and barriers of using a CDSS among healthcare professionals working in childhood cancer survivorship care?

(3) How can a CDSS be implemented in childhood cancer survivorship care according to healthcare professionals?

2. Method

Interviews were conducted to establish the preferences of healthcare professionals on the design of a CDSS, to explore the perceived benefits and barriers of using a CDSS among care providers, and to examine how a CDSS can be implemented in childhood cancer survivorship care. Interviews were considered an appropriate approach because they can contribute to gaining an understanding of the preferences, attitudes, and thought processes of the participants²⁰.

Participants

Participants of the interviews were healthcare professionals working in childhood cancer survivorship care. The participants were recruited via the judgemental sampling technique, which is defined as a technique that relies on the researcher's judgement to approach specific individuals related to the phenomenon being studied to participate in the study^{21,22}. The inclusion criteria for the participants consisted of individuals who (1) work as clinician, nurse practitioner, or guideline developer in the follow-up care of childhood cancer survivors and (2) speak and understand Dutch. No exclusion criterium was formulated. Eventually, six clinicians, two nurse practitioners, and three guideline developers participated in this study. The interviews lasted on average twenty-five minutes.

Procedure

At the start of all interviews, the researcher provided background knowledge about clinical practice guidelines, a CDSS, and considerations for the design of a CDSS. Furthermore, the researcher indicated that all information provided by the participants would be anonymously stored and analysed. Afterwards, the participants were asked for ethical approval of the recording, transcription, and analysis of their interviews. During the interviews, digital mock-ups were first discussed, and then questions about the perceived benefits, barriers, and implementation aspects were asked.

Materials

Interview scheme

A semi-structured interview scheme was used to structure the questions that were asked during the interviews. The questions of the scheme were divided into three parts. The first part of the scheme was composed of questions to explore the preferences on the design of a CDSS and was supported by mock-ups. Included questions concerned how guideline elements should be presented in a CDSS, why those elements should be presented in that way, why there was possible doubt among the interviewees on the preferences on the way of presentation, why there was possible difficulty to indicate the way of presentation, and why a certain way of presentation was unclear. The second part consisted of questions about the perceived benefits and barriers of using a CDSS. The questions were openly asked without any suggested benefits and barriers. However, if a healthcare professional could not describe any aspects, then the researcher provided some examples of barriers and facilitators that were found in literature for using a CDSS in healthcare^{11,12,23,24}. The third part of the scheme focused on the implementation of a CDSS in childhood cancer survivorship care. Included questions concerned how the guidelines for follow-up care are currently used, how a CDSS could fit in the current way of working of the healthcare professional, and what preconditions of both the design and clinical practice should be fulfilled, in order to have care providers use a CDSS. Those questions were derived from barriers and facilitators that were found by other studies that can influence the implementation and uptake of a CDSS in clinical practice^{11,12,23,24}. The semi-structured interview scheme is available in Appendix B.

Mock-ups

Mock-ups were used to elicit the preferences of healthcare professionals on the design of a CDSS. Mock-ups are prototypes of system designs that can visualise the user interface, to enable a clearer perspective of what the system can look like before it is developed completely²⁵. The layouts of the mock-ups were developed by exploring literature about the optimal design of a CDSS^{26,27}, and by examining studies that designed a $CDSS^{19,28,29}$. The designs of the following CDSSs were used as input in the mock-ups: (1) e-GuidesMed²⁸, (2) OncoGuide²⁹, and (3) a prototype of a CDSS from a study in which the guideline information is divided in tabs¹⁹. Moreover, the content of the mock-ups was created by examining all information and recommendations from the clinical practice guidelines that are used for childhood cancer survivorship care. Found elements that can be abstracted from the guidelines include the rationale, diagnostics, explanation diagnostics, questions medical history, health education and advice, other health abnormalities, actions if health abnormalities are found, the overview with all elements of the topic as figure, the uncertainty potential topics, and the topics chronic pain and healthy lifestyle. An example of the elements for one topic from the guidelines is available in Appendix A. Twenty-seven mock-ups were created for nine guideline elements, in which participants had to indicate their preferred way of presentation out of two to four mock-ups. Overviews of the discussed guideline elements and layout aspects are presented in Tables 2 and 3 respectively, also including the associated question and the mock-up options that could be chosen. Seven questions focused on the elements from the guidelines and two questions on the layout of a CDSS. As an illustration, the mock-ups that were used to elicit the preferences on the presentation of the rationale are presented in Figure 1. An overview of all mock-ups that were used during the interviews is available in Appendix C.

Table 2

Guideline elements	Questions in interview	Mock-up	o options shown to elicit p	oreferences
		Option 1	Option 2	Option 3
Rationale	How should the rationale	Always present	Present rationale via a	Do not present
	be presented?	rationale	pop-up	rationale
Explanation	How should the	Always present	Present explanation via	Do not present
diagnostics	explanation of the	explanation	a pop-up	explanation
	diagnostics be			
	presented?			
Questions medical	How should the	Always present	Present questions about	Do not present
history	questions about medical	questions about	medical history via a	questions about
	history be presented?	medical history	pop-up	medical history
Health education and	How should the health	Always present three	Present three elements	Do not present three
advice, other health	education and advice,	elements	via a pop-up	elements
abnormalities,	other health			
and actions if health	abnormalities, and			
abnormalities are found	actions be presented?			
Topics chronic pain	How should the topics	Always present topics	Present topics via a	Do not present topics
and healthy lifestyle	chronic pain and healthy		pop-up	
	lifestyle be presented?			
Overview with all	How should the	Always present	Present overview via a	Do not present
elements of one topic	overview with all	overview as an	pop-up	overview
as figure	elements of the topic as	appendix		
	figure be presented?			
Uncertainty potential	How should the	Always present	Include an exclamation	Do not present
topics	uncertainty of potential	uncertainty	mark for topics that are	uncertainty
	topics be presented?		provided with	
			uncertainty and see the	
			reason for uncertainty	
			via a pop-up	

Overview of the questions and mock-up options that were used in the interviews concerning the presentation of guideline elements in a CDSS

Table 3

Overview of the questions and mock-up options that were used in the interviews concerning the layout of a CDSS

Layout aspects of a CDSS	Questions in interview	Option 1	Option 2	Option 3	Option 4
Presentation of information	How should the guideline information be presented?	Information in a table	Information as separate text	-	-
Presentation of topics	How should the topics that apply to the survivor be presented?	Topics beneath each other (with scrolling)	Topics divided in small rounds (with pop-up)	Topics divided in tabs (with clicking)	Topics divided in an illustration (with pop-up)

Algemene informatie	Aanbevelin	gen			Algemene informatie	Aanbevelinger	1	4
	Option 1: Alw	ays present rationale				Option 2: Present	t rationale via a pop-up	
Primaire tumoren	Risico op:	Behandeld met: Rationale	Aanbevolen zorg:		Primaire tumoren	Risico op:	Aanbevolen zorg:	1
Diagnose gegevens	Schildklierfunctie	Radiotherapie waarbij de	Diagnostiek:		Diagnose gegevens	Schildklierfunctie	Diagnostiek:	1
Behandeling		schildklier in het bestralingsveld	 Laboratoriumonderzoek: TSH en FT4 		Behandeling	Rationale 🧲	 Laboratoriumonderzoek: TSH en FT4 	
Chemo		131 MIBG, allogene	Minimaal 1x per 2-3 jaar		Chemo	3	Minimaal 1x per 2-3 jaar	
Recidieven		stamceltransplantatie, of			Recidieven	Dyslipidemie	Diagnostiek:	
	a had a	volledige thyreoïdectomie				Nacionale	 Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal 	
Secundaire tumoren	Dyslipidemie	TBI OF HSCT	Diagnostiek:		Secundaire tumoren		In leder geval vanaf het 40e levensjaar	
			cholesterol, triglyceriden, totaal cholesterol/HDL- cholesterol			Longen	Diagnostiek	1
Voorgeschiedenis/			ratio)		Voorgeschiedenis/	Rationale	 Longfunctieonderzoek: inclusief flow-volume curve, diffusiecapaciteit en bepaling 	
gezondheidsproblemen	Longen	BCNU CCNU busulfan bestraling	In ieder geval variat net 40e ievensjaar		gezondheidsproblemen		longvolumina Feamailta bii start yan de LATER follow yn minimael 1x on ychwarren leeftiid	
Aanhovelingen		op de longen, allogene SCT, of	Longfunctionnderzoek: inclusief flow-unlume curve		Aanbevelingen	Nieren	Diagnostiek:	
Schildkligefunctio		chirurgie van de longen of het thormskalat	diffusiecapaciteit en bepaling longvolumina		Schildklierfunctie	Rationale	Analyse giomerulaire functie. Bloed: creatinine, berekening GER, Urine: creatinine, albumine.	
Dyslinidemie		CIRCITADSIMPLEY	Eenmalig bij start van de LATER follow up, minimaal 1x op		Dyslipidemie		albumine/kreat ratio	
Longen	Nieren	Radiotheranie on de	volwassen leeftijd		Longen		Minimaal 1 x per 5 jaar	
Nieren	increm.	nieren/urinewegen, ifosfamide,	Analyze alemanulaise function Disouth creatining, hereitening CED		Nieren	Lever	Diagnostiek:	
Lever		cisplatin, carboplatin of	Urine: creatinine, albumine, albumine/kreat ratio		Lever	The second se	 Laboratoriumonderzoek: ALAT, ASAT, gGT, alkalische fosfatase Fenmalie bli start LATER-follow up. 	
Uzerstapeling		staticeitranspiantatie	Minimaal 1 x per 5 jaar		Uzerstapeling	Uzerstapeling	Diagnostiek:	11
Milt	Lever	het bestralingsgebied heeft	Diagnostiek:		Milt	Rationale	Laboratoriumonderzoek: serum ferritine	
Vermoeidheid		gelegen, HSCT, methotrexaat,	Eenmalig bij start LATER-follow up		vermoeidneid	1.4%	Eenmalig bij start LATER follow up	
		dactinomycine, busulfan,				Rationale	Diagnostiek:	
Download IZP		chronische virale hepatitis,			Download IZP		 Aanvuilend onderzoek: Bij verdenking op functionele aspienie kan een bepaling van Howell Jolly bodies worden verricht om functionele aspienie te bevestigen. 	
		GvHD, leverchirurgie					Afwezigheid van Howell jolly bodies sluit echter een functionele aspienie niet uit	
	Apphovelin	2010				Aanhovalingar		Ŀ
	Aanpevenn				Algemene informatie	Aanbeveninger		
	Option 2: Pres	sent rationale via a po			Deimeire tumeren	Option 3: Do not	present rationale	
					Primaire tumor 1	Risico op:	Aanbevolen zorg:	11
					Diagnose gegevens	Schildklierfunctie	Diagnostiek:	11
					Behandeling	Rationale	Laboratoriumonderzoek: TSH en FT4	11
					Chemo	arwezig	Minimaal 1x per 2-3 jaar	41
					Recidieven	Dyslipidemie	Diagnostiek:	11
		Lipidenspectrum (tota	al cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal				 Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL-cholesterol ratio) 	11
Secundaire tumoren Beha	andeld met tenmi	nste één van de volgend			Secundaire tumoren		In leder geval vanaf het 40e levensjaar	
• R	adiotherapie waa	rbij de schildklier in het t	bestralingsveld heeft gelegen 5		Manager and the design of	Longen	Diagnostiek	11
voorgeschiedenis/	131 therapie		epaling		voorgeschiedenis/		Longfunctieonderzoek: inclusief flow-volume curve, diffusiecapaciteit en bepaling longvolumina	11
sezonditeidsproblemen - I-	131 MIBG		d		Bezonanerasproblemen		Lenmailg bij start van de LALER follow up, minimaal 1x op volwassen leeftijd	ш
Aanbevelingen · A	llogene stamceltra	ansplantatie			Aanbevelingen	Nieren	Diagnostiek:	11
Schildklierfunctie	olledige thyreoïde	ctomie	atinine, albumine,		Schildklierfunctie		Analyse glomerulaire functie. Bloed: creatinine, berekening GFR. Urine: creatinine, albumine,	11
					Dyslipidemie		albumine/kreat ratio	11
					Longen	Lever	Diagnostiek:	11
					Nieren		Iaboratoriumonderznek: ALAT ASAT #GT alkalische fosfatase	
					Lever		Eenmalig bij start LATER-follow up	
					Dzerstapeling	Uzerstapeling	Diagnostiek:	11
					Vermoeidheid		Laboratoriumonderzoek: serum ferritine Samada bit statt LATED following	
						Milt	Diagnostiek:	41
							Aanvallend onderzoek: Bij verdenking on functionele asplenie kan een benaling van Howell telle	
					Download IZP		bodies worden verricht om functionele asplenie te bevestigen.	
							Afwezigheid van Howell jolly bodies sluit echter een functionele asplenie niet uit	1.5

Figure 1: Mock-ups that were used to elicit the preferences on the presentation of the rationale in a CDSS

Data analysis

The preferences of healthcare professionals on the design, perceived barriers, benefits, and preconditions for the implementation of a CDSS were analysed via an analytical framework, using the program ATLAS.ti³⁰. The analytical framework was developed by deductively deriving fragments from the interview transcripts per research question³⁰. Afterwards, key themes and sub-themes were inductively derived from those fragments³⁰. Consequently, a framework was obtained of the data that illustrated the research questions via key themes and sub-themes. In addition, the quotes were translated into English, and the overview with original quotes and their translations is available in Appendix D.

The preferences on the design of a CDSS for childhood cancer survivorship care were also explored via the mock-up options that were favoured by the healthcare professionals. The preferences on the inclusion and presentation of the nine guideline elements in a CDSS were examined first. Then, the preferences on the layout of a CDSS were explored.

3. Results

3.1 How should the elements from the guidelines be presented in a CDSS?

This section describes the preferences of healthcare professionals on the inclusion of guideline elements in a CDSS, the preferred presentation of the guideline elements that were favoured to be included in a CDSS, and the preferred layout of the information and topics from the guidelines in a CDSS.

3.1.1 Preferences on the inclusion of guideline elements in a CDSS

Healthcare professionals indicated a variety of preferences regarding the inclusion of guideline elements in a CDSS. Their preferences are shown in Table 4 and described in more detail in the text below.

Table 4

Preferences of healthcare professionals (n=11) on the inclusion of the guideline elements in a CDSS

Guideline elements	Present element (n (%))	Do not present element (n (%))
Rationale	11 (100%)	0 (0%)
Diagnostics	11 (100%)	0 (0%)
Overview with all elements of one topic as figure	11 (100%)	0 (0%)
Uncertainty potential topics	11 (100%)	0 (0%)
Health education and advice	10 (91%)	1 (9%)
Explanation diagnostics	9 (82%)	2 (18%)
Topic healthy lifestyle	9 (82%)	2 (18%)
Topic chronic pain	6 (55%)	5 (45%)
Other health abnormalities	6 (55%)	5 (45%)
Actions if health abnormalities are found	6 (55%)	5 (45%)
Questions medical history	3 (27%)	8 (73%)

Guideline elements that largely received preferences for inclusion in a CDSS

Healthcare professionals largely agreed upon the inclusion of the information of seven guideline elements in a CDSS, namely the rationale for why a guideline topic applies to the survivor, the diagnostics that should be applied to the survivor, the overview with all elements of one topic as a figure, the uncertainty of topics that potentially apply to the survivor, health education and advice that should be provided to the survivor, the explanation of the diagnostics, and the topic healthy lifestyle. Below, the care providers' reasons for those preferences are described.

<u>Rationale, diagnostics, overview with all elements of one topic as figure, and uncertainty potential</u> topics: All eleven healthcare professionals preferred to have the rationale for why a guideline topic is applicable to the survivor available in a CDSS. "*I think it is good if you are wondering why the system is recommending something, because you might have thought of something else, that you can see why that is. And whether that (thought) is correct, or whether you agree with it (CDSS).*" [Clinician 4]. In addition, all care providers unanimously agreed to have the diagnostics, the overview with all guideline elements of one topic as figure, and the uncertainty of providing guideline topics that potentially apply to the survivor included in a CDSS.

<u>Health education and advice, explanation diagnostics, and topic healthy lifestyle</u>: Healthcare professionals largely agreed upon the inclusion of the health education and advice, the explanation of the diagnostics, and the topic healthy lifestyle in a CDSS. Only a few healthcare professionals chose to exclude those elements from a CDSS. *"They also need to think a bit for themselves. I do not think the support system*"

is meant to deploy the whole (guidelines) booklet, but more to help with what diagnostics you should do." [Guideline developer 3].

Guideline elements that received mixed preferences on the inclusion in a CDSS

Care providers described varying preferences on the inclusion of four guideline elements in a CDSS, namely the topic chronic pain, what other health abnormalities can occur, the actions that should be conducted if health abnormalities are found, and the questions about medical history. The healthcare professionals' arguments for those mixed preferences are described below.

<u>Topic chronic pain</u>: Healthcare professionals differed in their preferences about the inclusion of the topic chronic pain in a CDSS. Five care providers preferred to have the topic not available in a CDSS, as chronic pain will always be discussed during a consult if it is a problem for the survivor. The other six healthcare professionals preferred to have a complete overview with all guideline topics included that should be discussed with the survivor.

<u>Other health abnormalities and actions if health abnormalities are found</u>: Healthcare professionals described mixed preferences on the inclusion of what other health abnormalities can occur and what actions should be conducted if health abnormalities are found. Six healthcare professionals favoured including the two guideline elements in a CDSS. On the other hand, five care providers preferred to exclude the two guideline elements. *"I think you should include as little text as possible, otherwise people won't read it anymore."* [Clinician 5].

<u>Questions medical history</u>: Eight healthcare professionals preferred to exclude the questions about the medical history from a CDSS, as they indicated that doctors should be familiar with those questions themselves. The other three care providers did want to have the questions about the medical history available in a CDSS. "I do think it is important that it (questions medical history) appears in your overview for every patient, to ensure you will ask about it." [Clinician 3].

3.1.2 Preferences on the presentation of guideline elements in a CDSS

Healthcare professionals described varying preferences on how the guideline elements should be presented that were favoured to be included in a CDSS. The overview of their preferences is shown in Table 5 and is described in more detail in the text below.

Table 5

Preferences of healthcare professionals (n=varying per element) on the presentation of the guideline elements that were favoured to be included in a CDSS

Guideline elements	Present via pop-up	Present always
Uncertainty potential topics (n=11)	11 (100%)	0 (0%)
Explanation diagnostics (n=9)	9 (100%)	0 (0%)
Rationale (n=11)	10 (91%)	1 (9%)
Health education and advice (n=10)	9 (90%)	1 (10%)
Overview with all elements of one topic as figure (n=11)	7 (64%)	4 (36%)
Topic healthy lifestyle (n=9)	4 (44%)	5 (56%)
Diagnostics (n=11)	0 (0%)	11 (100%)

Guideline elements that largely received similar preferences on the presentation in a CDSS

Healthcare professionals largely agreed upon the way of presentation of five guideline elements in a CDSS. Recommendations on what diagnostics should be applied to the survivor were preferred to be always shown in a CDSS. In addition, four guideline elements were largely preferred to be presented via pop-ups in a CDSS, namely the uncertainty of providing topics that potentially apply to the survivor, the explanation of the diagnostics, the rationale for why a guideline topic applies to the survivor, and the health education and advice that should be provided to the survivor. The healthcare professionals' reasons for those preferences are described below.

<u>Diagnostics</u>: Healthcare professionals unanimously agreed to always show the diagnostics that should be applied to the survivor in a CDSS. "Of course, some people have very little time. And you just see it (diagnostics) here (in the overview), and you immediately know what to request or conduct." [Nurse practitioner 1].

<u>Uncertainty potential topics</u>: All eleven healthcare professionals agreed that the uncertainty of topics that potentially apply to the survivor should be presented via a pop-up in a CDSS. However, the figure on which the users had to click to obtain the pop-up that was used in the mock-ups (triangle with exclamation mark) was not always assessed as fitting by the care providers. "*Perhaps the figure may also be a bit more subtle. An exclamation mark seems like something very serious is going on, especially with such a triangle.* [...] Now it seems that this recommendation is the most important, that you should look at that first, as if the patient has the highest risk on this (topic)." [Guideline developer 2].

Explanation diagnostics, rationale, and health education and advice: Care providers largely preferred to have the explanation of the diagnostics, the rationale for providing a topic, and the health education and advice presented via pop-ups in a CDSS. In that way, the guideline elements are accessible in the system, but not always shown. "I think it (information from the guidelines) will become your own at some point, but it is useful to be able to find it again. So, I really like the option in which you can click on it. The overview is then also calmer, than that all information is in the overview." [Nurse practitioner 1]. Only a few healthcare professionals chose to have the guideline elements always presented in a CDSS, as they are then triggered to read the information.

Guideline elements that received mixed preferences on the presentation in a CDSS

Care providers described varying preferences on the presentation of two guideline elements in a CDSS, namely the overview with all elements of one topic as a figure, and the topic healthy lifestyle. Below, the care providers' arguments for those mixed preferences are described.

<u>Overview with all elements of one topic as figure</u>: Healthcare professionals had varying preferences about how the overview with all guideline elements of the specific topic as figure should be presented. Seven care providers indicated that the overview should be presented via a pop-up, positioned close to the other guideline elements of the topic. The other four healthcare professionals preferred to have the overview always presented in the appendix at the bottom of the system.

<u>Topic healthy lifestyle</u>: Healthy lifestyle, a topic that should constantly be monitored in all survivors, received varying presentation preferences. Five healthcare professionals preferred to have the information on healthy lifestyle always available in a CDSS. The other four care providers indicated that the information on the topic should be presented via a pop-up. *"It (healthy lifestyle) is something that you obviously always discuss. For clarity, I like that you know exactly what to do, but I prefer to have it in the way that you have to click on it."* [Nurse practitioner 1].

3.1.3 Preferences on the layout of a CDSS

Healthcare professionals largely agreed upon the presentation of the information and topics from the guidelines in a CDSS; both aspects were mostly preferred to be shown in a table. The overview of their preferences is shown in Table 6 and described in the text below.

Table 6

Preferences of healthcare professionals (n=11) on the layout of a CDSS

Layout aspects of a CDSS	Option 1 (n (%))	Option 2 (n (%))	Option 3 (n (%))	Option 4 (n (%))
Presentation of information	10 (91%) (table)	1 (9%) (text)	-	-
Presentation of topics	9 (82%) (table)	0 (0%) (bulbs)	2 (18%) (tabs)	0 (0%) (illustration)

<u>Presentation of information</u>: All but one healthcare professional preferred to have the guideline information presented in a table in a CDSS, in which the information is distributed in two columns. The guideline topics that apply to the survivor were preferred to be presented in the left column and the guideline information about the topic was preferred to be displayed in the right column. "*I find that table very insightful. I think that you also see more clearly what the organs (topics) are, and what you should do with them.*" [Clinician 3]. On the other hand, one care provider indicated that the guideline information is more easily transferable to other systems when it is presented as a separate text in a CDSS, and therefore, preferred the presentation of information as a separate text.

<u>Presentation of topics</u>: Healthcare professionals largely agreed upon using a table to present the guideline topics that apply to the survivor in a CDSS, in which the information and recommendations from the topics are available in one overview that can be scrolled through by the user. "*I just find a table clear; you can see it immediately, otherwise I have to start clicking. And I may do that, but do all the doctors here do that too? It is just the simplest, if you do not have to do anything for it.*" [Nurse practitioner 1]. Two healthcare professionals preferred to have the guideline topics presented in tabs. "*I think that (tabs) is more organised than such a whole table, in which all text will be included. If you do not need to see that text, then it is better if it is just hidden and expanded when you need it.*" [Clinician 1]. The healthcare professionals unanimously disagreed to have the guideline topics displayed in bulbs or incorporated in an illustration of the human body in a CDSS.

3.2 What are the perceived benefits and barriers of using a CDSS?

The healthcare professionals indicated a wide variety of perceived benefits and barriers of using a CDSS. Their described aspects could be categorised into seven benefits and four barriers, which are discussed below and summarised in Table 7.

Table 7

Overview of the perceived	benefits and barriers	of using a CDSS (n=11)
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Key themes	Sub-themes	Number of healthcare professionals that described the sub-theme (n)
Perceived benefits of using a CDSS	Easy access to background knowledge	10
	Provision of up-to-date care	7
	Facilitation of consult preparation	6
	Provision of consistent care	5
	Time savings	5
	Being less prone to medical errors	4
	Facilitation of patient participation	3

Key themes	Sub-themes	Number of healthcare professionals that described the sub-theme (n)
Perceived barriers of using a CDSS	Increased dependency on technology	5
	Difficulty to access	3
	Undermining of clinical competence	3
	Question of responsibility	2

3.2.1 Perceived benefits of using a CDSS

Healthcare professionals described seven benefits of using a CDSS, namely the easy access to background knowledge from the guidelines, the provision of up-to-date care to survivors, the facilitation of consult preparation, the provision of consistent care by all care providers, time savings, being less prone to medical errors, and the facilitation of patient participation. The healthcare professionals' arguments for those perceived benefits are described below.

Easy access to background knowledge: All but one healthcare professional indicated that the easy access to background knowledge from the guidelines would be a benefit when using a CDSS. "I think it might be even more accessible to check your own pragmatic approach with the guidelines. So as a kind of double check it is good." [Clinician 2].

<u>Provision of up-to-date care</u>: Another mentioned benefit of using a CDSS is the provision of up-todate care to survivors, as information and recommendations from the newest version of the guidelines are presented in a CDSS. The healthcare professionals indicated that outcomes from new research are constantly published, and therefore, updates in the guidelines are currently not always familiar to all care providers. *"Especially now that the guidelines have been updated, it is nice to explore the background knowledge, to see what the considerations were. New information may have been added to the recommendations."* [Clinician 3].

<u>Facilitation of consult preparation</u>: Six care providers indicated that a CDSS can facilitate the consult preparation with the survivor, as a CDSS automatically provides all of the guideline topics that apply to the survivor. "*I think it (CDSS) fits very nicely with what you are doing now in terms of preparation, because it (applicable guideline topics) just pops up. Sometimes, you have a patient, and he comes to the LATER (clinic), and you do not really know him at all, and then you have to go through the whole (patient) dossier to find out what has happened, and what (treatments) he has had." [Nurse practitioner 2].*

<u>Provision of consistent care</u>: Another described benefit of using a CDSS was the provision of consistent care by all care providers, as they all receive the same information and recommendations for survivors with similar medical backgrounds. "I think it is nice that we all pay attention to the same things. I think that it is currently varying a lot, that one (care provider) is much more focused on those things, and the other is much more focused on that. [...] And I think it is good that you all conduct the same diagnostics." [Nurse practitioner 2].

<u>Time savings</u>: Five healthcare professionals mentioned that a CDSS can contribute to time savings before and during the consult with the survivor, as the system automatically provides guideline information that should be used and applied to the survivor. "I think that I will be very pleased that the guidelines have already been adapted to that patient, with those diseases. Currently, you sometimes go through that (guidelines) booklet, certainly in the beginning, when I was not yet familiar, I went through everything. Like, does this apply to this patient, does this apply? And now (with a CDSS) I am simply presented with all the topics that should be applied to the patient." [Nurse practitioner 1].

<u>Being less prone to medical errors</u>: Being less prone to medical errors was another described benefit of using a CDSS. *"They [care providers] make fewer mistakes; every patient really receives the diagnosis they*

should receive. [...]. You are actually reducing the doctors' thinking that is prone to errors." [Guideline developer 3].

<u>Facilitation of patient participation</u>: The last benefit of using a CDSS that was described by three care providers is the facilitation of patient participation in the care pathway. The care providers indicated that additional information included in a CDSS can be used during consults if survivors ask for substantiation of certain recommended care practices. "Sometimes, it is also nice for patients to read along, or if you want to show why we conduct certain diagnostics." [Clinician 1].

3.2.2 Perceived barriers of using a CDSS

Healthcare professionals described four barriers that can impede them from using a CDSS, namely the increased dependency on technology, the undermining of clinical competence, the potential difficulty to access a CDSS, and the question of responsibility if a CDSS provides incorrect or incomplete care recommendations. Below, the healthcare professionals' arguments for those barriers are described.

Increased dependency on technology: One of the perceived barriers of using a CDSS that was described by five healthcare professionals is the increased dependency on technology. The healthcare professionals indicated that care providers may start to completely rely on the information and recommendations provided by a CDSS, while they should additionally always consider their own care practices. "I think that is certainly a major disadvantage of automating everything, because you have to keep thinking about the patient. That patient may also have had something else (which is not in the database), so you still have to conduct certain activities that are not in the guidelines." [Clinician 5].

<u>Difficulty to access</u>: Another described barrier of using a CDSS is the potential difficulty to access the system, which was initiated for one healthcare professional by negative experiences with using previous systems. "We previously had a system for our psychosocial questionnaires, in which you had to log in separately, and that was a hassle for everyone. [...] Make the CDSS especially easy to access, otherwise the threshold (to use) will be too high." [Clinician 4].

<u>Undermining of clinical competence</u>: Three care providers indicated that using a CDSS can initiate a feeling of undermining the clinical competence of the healthcare professional. "We as doctors really have a conversation with parents, and it is not a fire of questions." [Clinician 5].

<u>Question of responsibility</u>: The last barrier was described by two guideline developers, who came up with the question of who is responsible for the provided care if a doctor provides incorrect or incomplete care to the survivor, because a CDSS provided incorrect or incomplete care recommendations due to incomplete patient data. *"Suppose there is an error in the database, then it can go wrong. So, who is then responsible?"* [Guideline developer 3].

3.3 How can a CDSS be implemented in childhood cancer survivorship care?

The healthcare professionals mentioned various preconditions that should be met, to facilitate the successful implementation of a CDSS for childhood cancer survivorship care. Their described aspects could be categorised into six preconditions for the design of a CDSS and three preconditions for the clinical practice in which a CDSS will be implemented. Those preconditions are shown in Table 8 and described in the text below.

Table 8

Key themes	Sub-themes	Number of healthcare professionals that described the sub-theme (n)
Preconditions for the design of a	Usable for all care providers	8
CDSS	No actions required to use	8
	Integration with other systems	6
	Minimal required change in way of working	5
	Ability to note information	2
	Inclusion of up-to-date guidelines	1
Preconditions for the clinical	Care provider engagement to a CDSS	3
practice in which a CDSS will be	Presence of technical support	3
implemented	Database with complete and correct patient data	2

Overview of the preconditions for the design and clinical practice to facilitate the CDSS implementation (n=11)

3.3.1 Preconditions for the design of a CDSS

Healthcare professionals described six preconditions for the CDSS design that should be fulfilled to have them use a CDSS, namely a CDSS that is usable for all care providers, no actions that are required to use a CDSS, the integration of a CDSS with other systems, a minimal required change in way of working due to a CDSS, the ability to note information in a CDSS, and the inclusion of up-to-date guidelines in a CDSS. The healthcare professionals' arguments for those preconditions are described below.

<u>Usable for all care providers</u>: Eight healthcare professionals described the importance of a CDSS that is usable for all care providers. They indicated that not all care providers work with the same intensity at the LATER-clinic (clinic for monitoring the treatment-related late effects in childhood cancer survivors), as some care providers work in multiple departments in the hospital. The healthcare professionals described that those varying backgrounds have to be taken into account when designing a CDSS, as some care providers might require more guideline information in a CDSS. *"I think there is a difference between someone who works full-time at the LATER-clinic, and someone who works occasionally at the LATER-clinic. [...] There are paediatric oncologists who work at the LATER-clinic once a month, and they also have to work with it (CDSS)."* [Clinician 5].

<u>No actions required to use</u>: Another described precondition for the CDSS design is that no actions should be required for using a CDSS. Healthcare professionals mentioned that they should not be obliged to enter patient information in a CDSS, as the system should be able to automatically enter patient information from a database. *"It should not be the case that things have to be filled in mandatory, that you otherwise cannot continue. It should above all support and serve you, and you should not be bothered by it."* [Clinician 1].

Integration with other systems: Six healthcare professionals indicated that a CDSS should be integrated with other systems that are currently in use when providing care to the survivor. Described systems are (1) the electronic patient dossier (EPD), (2) a system that is used for psychosocial questionnaires, and (3) a system that is used for writing letters for patients and general practitioners. Especially the integration of a CDSS with the EPD was considered important by the care providers. "In (EPD) you provide care, otherwise someone else (another care provider) cannot see it either. The point is that you want to have all (information) about the patient together. [...] Here, in the summary (of the patient), everyone can see what they have had and what we need to do. If I have it (the information) in another system, I can see it, but the rest of the doctors cannot." [Clinician 6].

<u>Minimal required change in way of working</u>: Five healthcare professionals described that a CDSS should be designed that fits in the current way of working of the care providers, to ensure that a minimal change in way of working is required due to a CDSS. *"You are trained as a doctor to follow a certain pattern, and*

that is strongly ingrained. Then you do not follow your questions, so the (system) has to fit somewhere." [Clinician 1].

<u>Ability to note information</u>: The ability to note extra information about the survivor in a CDSS was another described precondition for the design. "We must be able to write in it, because sometimes you do something because someone has complaints, and sometimes you do not do something because someone does not want to. Then you must be able to indicate why you deviate from the guidelines." [Clinician 6].

Inclusion of up-to-date guidelines: The last precondition for the CDSS design that was mentioned by one guideline developer is the inclusion of an up-to-date digitalised document of the complete guidelines in a CDSS. The healthcare professional described that guideline information in a CDSS should correspond to the digitalised document of the guidelines, as differences in information cause mistrust in a CDSS. However, the inclusion of an up-to-date document might become problematic as updating a document takes more effort than updating algorithms in the system. *"If a small recommendation is adjusted, we adapt that algorithm in the clinical decision support system [...], so you can very quickly change which diagnostics the patient should receive. However, the paper-version of the guidelines must then be adjusted just as quickly, and I foresee a problem there. Because that is a completely different process, updating the (guidelines) booklet." [Guideline developer 2].*

3.3.2 Preconditions for the clinical practice in which a CDSS will be implemented

Healthcare professionals mentioned three preconditions for the clinical practice in which a CDSS will be implemented that should be met to have them use a CDSS, namely the care provider engagement to a CDSS, the presence of technical support if any problems with a CDSS arise, and the availability of a database with complete and correct patient data for a CDSS. Below, the healthcare professionals' arguments for those preconditions are described.

<u>Care provider engagement to a CDSS</u>: The care provider engagement to a CDSS was mentioned by three healthcare professionals to be a precondition for clinical practice that should be met to facilitate the CDSS implementation. According to one healthcare professional, the engagement can be influenced by the experienced difficulty while working with a CDSS. *"I think you should see the system as quality improvement.* But you also have to ensure that the people who work with it, also experience that the work becomes easier, and not more difficult, because otherwise I think you will lose them." [Clinician 4].

<u>Presence of technical support</u>: Another described precondition for clinical practice was the presence of technical support if any problems with a CDSS arise. "*I do not think many obstacles exist, unless ICT lets us down. It is also important that there is support, if the system is not working, that someone is available who can help to see what is going on."* [Clinician 3].

Database with complete and correct patient data: Two healthcare professionals indicated that a database should be available with complete and correct patient data for a CDSS, as the information and recommendations from a CDSS will be completely based on this data. The healthcare professionals indicated that the availability of a database with complete and correct patient data may be problematic in childhood cancer survivorship care, as care is also provided to survivors that received their treatments in hospitals from other countries. Those hospitals occasionally provide incomplete or incorrect patient histories, leading to incomplete or incorrect information in the database. *"What if there is an error in patient information, are you then going to offer the wrong care? That can happen. In that sense, all of that (patient information) has to be checked very carefully, whether it is all correct."* [Guideline developer 2].

4. Discussion

This study aimed to (1) examine the preferences of healthcare professionals on the inclusion and presentation of the guideline elements in a CDSS, (2) identify the perceived benefits and barriers of using a CDSS among care providers, and (3) explore how a CDSS can be implemented in childhood cancer survivorship care. In this section, key findings are discussed separately for the three sub-research questions. Afterwards, strengths, limitations, and recommendations for this study are described. Lastly, an overarching conclusion of this study is given, including the answer to the main research question.

4.1 What are the preferences of healthcare professionals on the inclusion and presentation of the elements from the Dutch long-term follow-up guidelines for childhood cancer in a CDSS for healthcare professionals?

According to the healthcare professionals, the following seven guideline elements should definitely be included in a future CDSS for childhood cancer survivorship care: the rationale for why a guideline topic is applicable to the survivor, the diagnostics, further explanation of the diagnostics, health education and advice, the topic healthy lifestyle, an overview with all elements of one topic as a figure, and the uncertainty of providing topics that potentially apply to the survivor. Care providers largely agreed that from those elements, the diagnostics and the topic healthy lifestyle should always be shown in a table, and the other guideline elements should be made easily accessible via pop-ups in a CDSS. These findings are in line with a study by Séroussi et al. (2012)³¹, who examined why care providers in breast cancer care do not comply with recommendations that are provided by a CDSS, and found that care providers require evidence and motives for why a system provides recommendations, at the exact time they make the clinical decision. Our study additionally found which guideline information should be easily accessible, and that this information should be presented via pop-ups to prevent an overload of information in a CDSS. The study by Séroussi et al. (2012)³¹ did not find that guideline information about health education and advice for the patient should be included in a CDSS, while our study showed that almost all healthcare professionals wanted this guideline element available in a CDSS. The difference in results can be caused by different clinical contexts in which the studies have been performed, as the study by Séroussi et al. (2012)³¹ was conducted in breast cancer care and ours in the follow-up care of childhood cancer. Both clinical contexts are different as follow-up care has a specific focus on preventing the occurrence of new health abnormalities, and not on treating diagnosed health abnormalities, as patients with a new diagnosis will be transferred to the department where that specific health abnormality can be treated³². The prevention of health abnormalities in survivorship care can be facilitated by providing health education and advice on beneficial practices and healthy lifestyles to the survivors³², while breast cancer care focuses more strongly on treating patients that are diagnosed with cancer. Therefore, care providers in breast cancer care may prefer different guideline elements in their CDSS. It can be concluded that the preferred design of a CDSS is dependent on the clinical context in which the system will be used.

Healthcare professionals showed contrasting needs on the inclusion of three guideline elements in a future CDSS: what other health abnormalities can occur, actions if health abnormalities are found, and the topic chronic pain. Some care providers prefer to have a complete overview with all elements and topics from the guidelines that apply to the survivor available in a CDSS, while others prefer a low amount of information in the system. The differences in preferences can be explained by the fact that the care providers in childhood cancer survivorship can work in multiple departments, and therefore, have different intensities in working with the guidelines for survivorship care. As a result, healthcare professionals are in different degrees familiar with

the content of the guidelines; some may know the complete guidelines by themselves as they daily work in survivorship care, while others may need to constantly consult the guidelines. A CDSS should be designed, in which those varying needs and preferences are incorporated into the system. A possible solution is the use of a personalised CDSS, in which a healthcare professional can individually indicate how elements and topics from the guidelines should be presented in a CDSS. Their preferences can be memorised by the system, so healthcare professionals only need to indicate their preferred design once. Future research should explore how a personalised CDSS can be used for childhood cancer survivorship care.

4.2 What are the perceived benefits and barriers of using a CDSS among healthcare professionals working in childhood cancer survivorship care?

Major perceived benefits of using a CDSS for healthcare professionals in childhood cancer survivorship care are the easy access to background knowledge and the provision of up-to-date care. Perceived barriers that can impede care providers from using a CDSS are the increased dependency on technology and the potential difficulty to access. The created overview with perceived benefits and barriers of using a CDSS can inform future CDSS development as both the design and implementation process can be adjusted in such a way that the benefits are realised and the barriers are prevented from happening. The found benefits and barriers largely correspond to other studies that explored the benefits and barriers of using CDSSs in breast cancer, which are summarised in a review by Mazo et al. (2020)³³. A similarly found benefit was the reduction of variation in the quality of care due to using a CDSS, and a similar barrier was the over-reliance on technology when using a CDSS³³. However, the study by Mazo et al. (2020)³³ additionally showed that the main barrier of using a CDSS is the challenging acceptance process of care providers. Our study did not find this barrier among healthcare professionals in childhood cancer survivorship, which can be due to the fact that they have positive experiences with working with systems to improve the quality of care, such as a system used for patient-completed psychosocial questionnaires. Besides, childhood cancer survivorship care contains an innovative environment, in which new studies are constantly conducted and applied in clinical practice⁴. As a result, healthcare professionals in survivorship care may be more open to new technologies, and therefore, do not need encouragement on the acceptance of a CDSS.

Although most found benefits and barriers of using a CDSS were found by guideline developers, and by both clinicians and nurse practitioners who provide clinical care to survivors, some aspects were only described by one of the groups. Two benefits that were solely described by the clinicians and nurse practitioners of using a CDSS are the facilitation of consult preparation and patient participation. Besides, only the guideline developers brought up the barrier with the question of who is responsible for the provided care if a CDSS provides incorrect or incomplete care recommendations due to incomplete patient data. These findings suggest that guideline developers additionally consider the practical implications that a CDSS can involve, while clinicians and nurse practitioners especially focus on what aspects can be facilitated by a CDSS in daily clinical practice.

4.3 How can a CDSS be implemented in childhood cancer survivorship care according to healthcare professionals?

A CDSS can be implemented in childhood cancer survivorship care if at least the following preconditions of the CDSS design are fulfilled: a CDSS that is usable for all care providers, no actions required to use a CDSS, and the integration of a CDSS with other systems that are in use. In addition, found preconditions that should

be met for clinical practice in which a CDSS will be implemented include the care provider engagement to a CDSS and the availability of a database with complete and correct patient data. This last finding is in line with a study by O'Leary et al. (2014)³⁴, who found that a major aspect of the clinical uptake of a CDSS appeared to be the quality of available patient information in a CDSS, as the system automatically provides recommendations based on this data³⁴. In addition, a CDSS should be able to automatically and correctly collect patient information from a database. If patient information is incorrect or missing in a database, or incorrect algorithms are included in a CDSS that lead to the wrong collection of information from the database, the provision of incorrect or incomplete recommendations is the result³⁴. Consequently, the healthcare professional may provide unfitting care to the patient. Care providers in our study indicated that patient data in childhood cancer survivorship can be incomplete or incorrect, possibly caused by the fact that survivorship care also provides care to survivors treated in hospitals from other countries that were unable to maintain electronic patient dossiers that could be transferred to other hospitals. Therefore, realising the fulfilment of the precondition of the availability of a database with complete and correct patient data can be challenging in childhood cancer survivorship care. Future efforts are needed to ensure that the database for a CDSS contains complete and correct patient data.

4.4 Strengths and limitations

Three strengths of this study can be described. The preferences on the design of a CDSS were explored with care providers that are going to work with the system. As a result, the CDSS can contain a user-centred design, which increases the chance of successful implementation and uptake of a CDSS³⁵. Another strength of this study is the inclusion of the perspectives of three different healthcare professionals, as they could provide different insights into the design and implementation options of a CDSS. The clinicians and nurse practitioners understand in which clinical context a CDSS will be used, while the guideline developers are specialised in designing evident instruments that are practically usable. The last strength of this study is that the preferences of healthcare professionals on the CDSS design were explored, in combination with perceived benefits, barriers, and preconditions for implementation. Consequently, broader insights could be gained for the future development and implementation of a CDSS.

In addition to the strengths, some limitations of this study need to be acknowledged as well. The generalisability of the results on the preferences on the inclusion and presentation of specific guideline elements in a CDSS can be questioned, as the study focused on the content of guidelines that are only used in childhood cancer survivorship care, while other clinical fields use guidelines with different elements. However, the underlying arguments for the preferences on the design can be used, as well as the identified benefits, barriers and preconditions for implementation, as a starting or improvement point in other clinical fields for their CDSS development. Another limitation of this study is that only one researcher analysed the data, making the data extraction error-prone. The last limitation is that the interviews were solely conducted with professionals working in childhood cancer survivorship care, while the inclusion of healthcare professionals from other clinical settings that are concerned with CDSSs could have been useful as well. Those healthcare professionals could have contributed to gaining broader insights into what aspects contribute to the successful development and implementation of a CDSS. In addition, a broader inclusion of perspectives provides possibilities to develop a CDSS. Future research should aim to collaborate with healthcare professionals working

in other clinical settings that are developing CDSSs, to increase the future usability of a CDSS for survivorship care.

4.5 Recommendations

In addition to the above-mentioned recommendations, recommendations can be made on the design of a future CDSS for childhood cancer survivorship care, based on the healthcare professionals' preferences on the inclusion and presentation of the guideline elements in a CDSS. Guideline elements are recommended to be included, only if a vast majority of the healthcare professionals preferred to have the elements available in a future CDSS, as literate indicates that the density of screen information should be minimised^{13,36}. In addition, the recommended way of presentation of the guideline elements is based on the way that was preferred by the majority of the healthcare professionals. A CDSS design is recommended with both the diagnostics that should be applied to the survivor and the topic healthy lifestyle always shown in a table. The following guideline elements are recommended to be easily accessible via pop-ups: (1) the rationale for why a guideline topic is applicable to the survivor, (2) the explanation of the diagnostics, (3) the health education and advice, and (4) the possible uncertainty of whether a guideline topic is applicable to the survivor, in which the user can click on the words 'be careful' to obtain the pop-up. Lastly, the overview with all elements of a guideline topic as a figure is recommended to be displayed in the appendix. An illustration of the recommended CDSS design is available in Appendix E, in which the different functionalities of the design are illustrated in separate mockups. This recommended design can be used as a starting point for the future development of a CDSS for childhood cancer survivorship care. However, healthcare professionals showed varying preferences on the design, and therefore, it is unknown whether all care providers will be satisfied with the recommended design. If this CDSS design will be used for future development, then future research is needed to reach an agreement on the design, which can be obtained by conducting a focus group on the design with all care providers that will work with the system.

4.6 Conclusion

In this study, we examined how a CDSS for childhood cancer survivorship care should be designed and implemented. The created overviews with the preferences of healthcare professionals on the design, benefits, barriers, and preconditions of a CDSS can be used to inform future CDSS development, as the gained insights can be incorporated into the design and implementation process. Future efforts are needed to explore what CDSS design fits best in childhood cancer survivorship care: (1) a personalised CDSS design that can be customised per care provider, or (2) the same CDSS design for all care providers, which can only be created once a consensus has been reached on the design with all care providers that will use a CDSS. In addition, future efforts are needed to ensure that the database for a CDSS includes complete and correct patient information. This study contains the first steps towards the future design and implementation of a CDSS, but still more efforts are needed to realise the optimal CDSS for childhood cancer survivorship care. Other aspects that also have an influence on the realisation of the optimal CDSS include the availability of a database with complete and correct patient information, and whether the patient data can be automatically and successfully entered from the database in a CDSS. Eventually, the optimal design of a CDSS accompanied by successful implementation can be the way towards better childhood cancer survivorship care, so future efforts should be made to realise the optimal CDSS for this clinical setting.

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Appendix A: Example of the guideline information and recommendations for one topic (pulmonal problems) from the Dutch guidelines for childhood cancer survivorship care

Consensus-based richtlijn pulmonale problemen

Bij wie?

Na behandeling met

- carmustine (BCNU)
- lomustine (CCNU)
- busulfan
- bleomycine
- radiotherapie waarbij de longen in het bestralingsveld hebben gelegen, inclusief TBI
- een allogene stamceltransplantatie
- chirurgie aan de longen/thoraxskelet

Welke afwijkingen komen voor?

- Longfunctiestoornissen
- Progressieve longfibrose na toediening van hoge zuurstof concentraties (bijvoorbeeld tijdens narcose) bij survivors die behandeld zijn met bleomycine en reeds bekend zijn met longfibrose

Voorlichting en advies

- Geef <u>voorlichting</u> over de verhoogde kans op longproblemen en de mogelijke symptomen die hierdoor kunnen optreden
- <u>Adviseer</u> om niet te roken, inclusief beperking van roken in de omgeving
- Adviseer bij longproblemen jaarlijkse griepvaccinatie
- Overweeg bij longproblemen vaccinatie tegen pneumococcen
- Geef <u>voorlichting</u> over het *mogelijke* risico van O2 toediening: bij voorkeur geen blootstelling aan extra zuurstof. *NB Dit geldt ook voor O2-inhalatie bij sporten als scuba-diving of een verblijf in het hooggebergte*

Welke diagnostiek zou moeten plaatsvinden en in welke frequentie?

- Bij een bezoek aan de LATER poli wordt als onderdeel van de uitgebreide anamnese en lichamelijk onderzoek specifiek aandacht besteed aan pulmonale problemen (Appendix).
- <u>Aanvullend onderzoek</u>
 - <u>Longfunctieonderzoek</u>: inclusief flow-volume curve, diffusiecapaciteit en bepaling longvolumina: eenmalig bij start van de LATER follow up, minimaal 1x op volwassen leeftijd. Herhalen bij afwijkingen of op indicatie.

Wat moet er gedaan worden als er afwijkingen gevonden worden?

- Herhaal het longfunctieonderzoek als er nieuwe klachten of nieuwe bevindingen bij het lichamelijk onderzoek worden waargenomen
- Verwijs naar een longarts

Appendix B: Interview scheme for the interviews

Introductie (5 minuten)

- **Doel interview**: inzicht krijgen in hoe de informatie uit de update van de LATER-richtlijn in het beslissingsondersteunend systeem (digitaal) kan worden gepresenteerd aan de zorgverleners
- **Duur**: ongeveer halfuur
- Introductie beslissingsondersteunend systeem
 - o Richtlijnen
 - Helpen met geven <u>best mogelijke zorg</u>, gebaseerd op <u>studies naar late effecten</u>
 - o Klinisch ondersteunend systeem
 - <u>Vereenvoudigen</u> van gebruik richtlijnen
 - Aanbevelingen <u>samengevat</u> in systeem
 - Inrichting klinisch ondersteunend systeem
 - <u>Veel informatie</u> beschikbaar uit richtlijnen
 - Onduidelijk welke <u>informatie uit richtlijnen het belangrijkst</u> is
 - Onduidelijk hoe systeem moet worden <u>ingericht</u>
- Privacy: alle gegevens die je tijdens het interview verstrekt worden anoniem verwerkt
- **Opname**: akkoord?
- Gebruik interview voor onderzoek: akkoord?
- Vragen: voorafgaand aan de afname van het interview?
- **Beginvraag**: kan je jezelf kort introduceren?

Onderdeel 1: Ontwerp van een CDSS (15 minuten)

1. Kernvragen mock-ups

- 1) Hoe moet de rationale worden getoond?
 - a) Optie 1: Altijd de rationale tonen
 - b) Optie 2: Op de rationale klikken (met een pop-up)
 - c) Optie 3: De rationale niet tonen
- 2) Hoe moet de toelichting van de diagnostiek worden getoond?
 - a) Optie 1: Altijd de toelichting tonen
 - b) Optie 2: Op de toelichting klikken (met een pop-up)
 - c) Optie 3: De toelichting niet tonen
- 3) Hoe moet de anamnese (vragen over medische geschiedenis) worden getoond?
 - a) Optie 1: Altijd de anamnese tonen
 - b) Optie 2: Op de anamnese klikken (met een pop-up)
 - c) Optie 3: De anamnese niet tonen
- 4) Hoe moeten 'voorlichting en advies', 'awareness andere afwijkingen' en 'acties bij gevonden afwijkingen' worden getoond?
 - a) Optie 1: Altijd de drie elementen tonen
 - b) Optie 2: Op de drie elementen klikken (met een pop-up)
 - c) Optie 3: De drie elementen niet tonen
- 5) Hoe moeten de onderwerpen chronische pijn en gezonde leefstijl worden getoond?
 - a) Optie 1: Altijd de twee onderwerpen tonen
 - b) Optie 2: Op de twee onderwerpen klikken (met een pop-up)
 - c) Optie 3: De twee onderwerpen niet tonen
- 6) Hoe moet het richtlijn-boekje (een overzicht met alle elementen van het onderwerp als figuur) worden getoond?
 - a) Optie 1: Altijd het richtlijn-boekje bij de bijlagen tonen
 - b) Optie 2: Op het richtlijn-boekje klikken (met een pop-up)
 - c) Optie 3: Het richtlijn-boekje niet tonen

- 7) Hoe moet de onzekerheid van het geven van bepaalde onderwerpen worden getoond?
 - a) Optie 1: Altijd de onzekerheid tonen
 - b) Optie 2: Op een uitroepteken klikken bij de onderwerpen die met onzekerheid kunnen worden gegeven (met pop-up)
 - c) Optie 3: De onzekerheid niet tonen
- 8) Hoe moet de richtlijn-informatie worden getoond?
 - a) Optie 1: Informatie in een tabel
 - b) Optie 2: Informatie als losse tekst
- 9) Hoe moeten de onderwerpen die van toepassing zijn op de survivor worden getoond?
 - a) Optie 1: Onderwerpen onder elkaar (met scrollen)
 - b) Optie 2: Onderwerpen ingedeeld in bolletjes (met pop-up)
 - c) Optie 3: Onderwerpen ingedeeld in tabbladen
 - d) Optie 4: Onderwerpen verwerkt in een illustratie (met pop-up)

2. Vragen over het ontwerp van de mock-ups (vragen stellen tijdens kernvragen)

- Kan je toelichten <u>waarom je voor deze optie</u> kiest?
- Kan je aangeven waarom je <u>twijfelt</u> over jouw keuze?
- Kan je uitleggen waarom je het <u>lastig vindt</u> om een optie te kiezen?
- Kan je uitleggen waarom je deze optie <u>onduidelijk</u> vindt?

Onderdeel 2: Voordelen en belemmeringen bij het gebruik van een CDSS (5 minuten)

- Wat is voor jou de <u>meerwaarde</u> bij het gebruik van het beslissingsondersteunend systeem?
 - Welke voordelen bij het gebruik?
 - Voorbeelden: makkelijk om richtlijnen te gebruiken, minder tijd kwijt aan informatie opzoeken
- Waar zie je mogelijke <u>belemmeringen</u> bij het gebruik van het beslissingsondersteunend systeem?
 - Welke <u>belemmeringen/nadelen</u> bij het gebruik?
 - Voorbeelden: te weinig tijd, niet passend in workflow, geen training

Onderdeel 3: Implementatie van een CDSS (5 minuten)

- Wat vond je van de <u>onderwerpen</u> die net zijn behandeld?
 - Zijn er onderwerpen die je hebt <u>gemist</u> over de inrichting van het beslissingsondersteunend systeem? Zo ja: welke?
- Hoe gebruik je momenteel de <u>LATER-richtlijn</u>?
- Hoe past volgens jou het beslissingsondersteunend systeem in je huidige manier van werken?
- Aan welke <u>voorwaarden moet het beslissingsondersteunend systeem</u> voldoen zodat het kan worden geïmplementeerd op de poli?
- Aan welke <u>voorwaarden moet de poli</u> (klinische praktijk) voldoen zodat het kan worden geïmplementeerd?

Afsluiting (2 minuten)

- Heb je nog <u>verdere vragen of aanvullingen</u>?
- Bedankt voor je tijd!

Appendix C: Overview of the mock-ups used during the interviews



4 Fictieve casus: vrouw (>18) die alleen allogene stamceltransplantatie heeft gehad Nu al zijn 11 richtlijnen van toepassing: Alopecia Secundaire huidtumoren Onderdeel 1: inhoud van Schildklierfunctie Dyslipidemie de richtlijn Longen Nieren • Lever IJzerstapeling • Milt • Mond/gebit Vermoeidheid

8

5

Mock-ups vraag 1

Hoe moet de rationale worden getoond?



7

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i agnostiek: Laboratoriumonderzoek: ALAT, ASAT, gGT, alkalische fosfatase Eenmalig bij start LATER-follow up
lagnostiek: Laboratoriumonderzoek: serum ferritine Eenmalig bij start LATER follow up

	Aanbeveling Optie 2: Op de	en rationale klikken (met een pop-up)
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	Behandeld met tenmin	iste één van de volgende: 🛛 🕅 📐
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	Optie 3: De rati	ionale niet tonen
Primaire tumoren Primaire tumor 1	Risico op:	Aanbevolen zorg:
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Secundaire tumoren		cholesterol/HDL-cholesterol ratio) In ieder geval vanaf het 40e levensjaar
Voorgeschiedenis/ gezondheidsproblemen	Longen	Diagnostiek Longfunctieonderzaek: inclusief flow-volume curve, diffusiecapaciteit en bepaling longvolumina Eenmalig bij start van de LATER follow up, minimaal 1x op volwassen leeftijd
Aanbevelingen Schildklierfunctie Dyslipidemie	Nieren	Diagnostiek: • Analysa glomerulaire functie. Bloed: creatinine, berekening GFR. Urine: creatinine, albumine, albumine/kreat at0 Mimimal K per 5 jaur
Nieren Lever	Lever	Diagnostiek: • Laboratorlumonderzoek: ALAT, ASAT, gGT, alkalische fosfatase Eenmäig bij start LATER-follow up
IJzerstapeling Milt Vermoeidheid	Uzerstapeling	Diagnostiek: • Laboratoriumonderzoek: serum ferritine Eeemalig bij start LATER follow up
	Milt	Diagnostiek:

		1. Hoe m	oet de	e rationale worden	getoo	nd?
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Meet	Radicilier gin grån nimm, krimergen, fodiomide, clugintin, carbopiatio of stamocheungkantalis	Bagecelak - Analyse gloweniaire kente Allanti continue, benkening (FK, Ultra enadrino, albarrino, Braniko, Brata tato Biologia I com Laor	Unier Patronike	Glaporiek Laboratukunonderanic ADR, 1987, p01, eksiste forlatse formalij bijnar UKBI-Millon su	Louis	Dogwiski Sogwiski Lidowniwnalecodi: #AEAH, piC skalache lodataw Smellgiti mat MEEHdowsp
Lee'	Redot water warful de terre la herriner allegatiet welte griegen, HGC methot wart, dentiner gener, haafan, dentiner gener, haafan, densitiet with begette, densitiet with begette, densitiet ofte begette, densitiet ofte begette,	Disported • Educated monitorate: ADI, PET, gPT, elisibilite for factore Enviroligiti part (ADIE Fallor ap	Uniting of the Patronale NBt Patronale	Hoperate Constraints Constraints	the expeting	Executed: - schoolst execute and a sense heriter (brought) (1) and U(2) heriter ap Figuration - A <i>Ann</i> and and each (1) year for the spin for these heriters are should be points and the sense heriter of includence applies to beering as.

Mock-ups vraag 2

Hoe moet de toelichting van de diagnostiek worden getoond?

imaire tumoren	Riving and	Antheneles see
rimaire tumor 1	Kisico op.	Nameevolen zong:
liagnose gegevens	Schildklierfunctie	Diagnostiek:
Behandeling		Laboratorlumonderzoek: TSH en FT4 Minimaal 1x per 2-3 jaar
.nemo Pocidiovon		Toelichting:
cundaire tumoren		 Bij LATER patiënten die zowei op het hoofd als op de hals bestraald zijn, kan er sprake zijn van een gecombineerde hypothyrolike, duz een mild verhoogd TSH bij laag-normaal F14. Om die reden moet er noot alleen gescreed worden met TSH.
orgeschiedenis/		 Na hoofdbestraling of langdurig sterolden kan er sprake zijn van een cortisol deficiëntie. De bijnier-as moet adequaat getest zijn voordat kan worden gestart met thyroxine suppletie.
condheidsproblemen	Dyslipidemie	Diagnostiek:
nbevelingen childklierfunctie		 Upidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL-cholesterol ratio) In ideor geval vanaf het Rel eventgaar
yslipidemie		Toelichting:
ongen		Startleeftijd is afhankelijk van familieanamnese en andere cardiovasculaire risicofactoren
lieren ever		 Het lipidenspectrum hoeft niet meer nuchter bepaald te worden. Overweeg bij afwijkingen het onderzoek nuchter te herhalen
zerstapeling	Longen	Diagnostiek:
lilt ermoeidheid		 Longfunctieonderzoek: inclusief flow-volume curve, diffusiecepackeit en bepaling longvolumina Eenmalig bij start van de LATER follow up, minimaal 1x op volwassen leeftijd
		Toelichting:
0 1 1/70		Herhalen bij afwijkingen of op indicatie

13	Algemene informatie	Aanbevelir	ngen
15	Delma las tuma sen	Optie 2: Op o	le toelichting klikken (met een pop-up)
	Primaire tumor 1	Risico op:	Aanbevolen zorg:
	Diagnose gegevens Behandeling	Schildklierfunctie	Diagnostick: • Laboratoriumonderzoek: TSH en FT4 Minimaal zx per 2-3 jaar
	Chemo		Toolichting (
	Recidieven	Dyslipidemie	Diagnostiek:
	Secundaire tumoren		 Upidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, trighyceriden, totaal cholesterol/HDL cholesterol ratio) in leder geval vanaf het 40e levensjaar
	Voorgeschiedenis/	1 man	Toelichting
	gezondheidsproblemen Aanbevelingen	Congen	 Longfunctionderzoek: Inclusief flow-volume curve, diffucieospachteit en bepaling longvolumina termnalig bij start van de LATER follow up, minimaal 1x op volwassen leeftijd Touliehen
	Schildklierfunctie	Nieren	Diagnostick:
	Dyslipidemie Longen Nieren		 Analyse glomerulaire functie. Bloed: creatinine, berekening GFR. Urine: creatinine, albumine, albumine/break ratio Minimaal 1 x por 5 Jaar Toelichting.
	Uzerstanaling	Lever	Diagnostiek:
	Milt Vermoeidheid		Laboratorkumonderzoek: AIAT, ASAT, gGT, alkalische fosfatase Eemmalig bij stat LAYER-follow up Toelichning
		Uzerstapeling	Diagnostiek:
	Download IZP		Laboratoriumonderzoek: serum ferritine Eenmalig bij start (ATER follow up Toelichting

T	colichting laborator	iumandamaski 🛇	
Secundaire tumoren	Deliciting laborator	Iumonderzoek.	, totaal
•	BIJ LAI ER patiente	n die zowel op het hoofd als op de hals bestraald zijn, kanvo	
	er sprake zijn van	een gecombineerde hypothyroïdie, dwz een mild	
	verhoogd TSH bij l	laag-normaal FT4. Om die reden moet er nooit alleen	
	gescreend worder	n met TSH.	
A and a set line of a set of the	gescreend worder	n met TSH. a of langdurig storpiden kan ar enroke zijn van oon corticel.	
Aanbevelingen	gescreend worder Na hoofdbestralin	n met TSH. g of langdurig steroïden kan er sprake zijn van een cortisol	
Aanbevelingen Schildklierfunctie	gescreend worder Na hoofdbestralin deficiëntie. De biji	n met TSH. g of langdurig steroïden kan er sprake zijn van een cortisol nier-as moet adequaat getest zijn voordat kan worden	
Aanbevelingen Schildklierfunctie Dyslipidemie	gescreend worder Na hoofdbestralin deficiëntie. De biji gestart met thyro	n met TSH. g of langdurig steroïden kan er sprake zijn van een cortisol nier-as moet adequaat getest zijn voordat kan worden kine suppletie.	
Aanbevelingen • Schildklierfunctie Dyslipidemie Longen	gescreend worder Na hoofdbestralin deficiëntie. De biji gestart met thyro	n met TSH. g of langdurig steroïden kan er sprake zijn van een cortisol nier-as moet adequaat getest zijn voordat kan worden kine suppletie.	ongvolumina albumine,
Aanbevelingen Schildklierfunctie Dyslipidemie Longen Nieren	gescreend worder Na hoofdbestralin deficiëntie. De bij gestart met thyrox	n met TSH. g of langdurig steroïden kan er sprake zijn van een cortisol nier-as moet adequaat getest zijn voordat kan worden dine suppletie.	angvolumina albumine,
Aanbevelingen Schildklierfunctie Dyslipidemie Longen Nieren Lever	gescreend worder Na hoofdbestralin deficiëntie. De biji gestart met thyrox	n met TSH. g of langdurig steroïden kan er sprake zijn van een cortisol nier-as moet adequaat getest zijn voordat kan worden kine suppletie.	angvolumina albumine,
Aanbevolingen Schildklierfunctie Dyslipidemie Longen Nieren Lever Uzerstapeling	gescreend worder Na hoofdbestralin deficiëntie. De biji gestart met thyroo	n met TSH. go f langdurig steroiden kan er sprake zijn van een cortisol nier-as moet adequaat getest zijn voordat kan worden dine suppletie.	angvolumina albumine,
Aanbevelingen Schildklierfunctie Dyslipidemie Longen Nieren Lever Uzerstapeling Milt	gescreend worder Na hoofdbestralin deficiëntie. De biji gestart met thyroo	n met TSH. g of langdurig steroïden kan er sprake zijn van een cortisol nier-as moet adequaat getest zijn voordat kan worden eine suppletie. Uiteronie stero Spire Digenstek - Jacobie steronie sek, AAC, PCI, skalade ladese	angvolumina albumine,
Anbevelingen Schildkliertunctie Dyslipidemie Longen Nieren Lever Dizerstapeling Milt Vermoeidheid	gescreend worder Na hoofdbestralin deficiëntie. De biji gestart met thyrox	met TSH. go f langdurig steroiden kan er sprake zijn van een cortisol nier-as moet adequaat getest zijn voordat kan worden dine suppletie. Mengenika Mengenika • Lien promotensek AAX.AXX.ptt skalade fedelae from get and total state and an	angvolumina albumine,
Aanbevelingen Schildklierfunctie Dyslipidemie Longen Nieren Lever Uzerstapeling Milt Vermoektheid	gescreend worder Na hoofdbestralin deficiëntie. De biji gestart met thyroo	met TSH. g of langdurig steroïden kan er sprake zijn van een cortisol nier-ss moet adequaat getest zijn voordat kan worden werden is specifie Obgenetiek - Songenetiek - Songenetiek - Songenetiek - Songenetiek - Songenetiek - Songenetiek - Songenetiek - Songenetiek - Songenetiek	angvolumina albumine,
Annbevelingen Schildklierfunctie Dyslijsleenie Longen Hieren Lever Uzerstapeling Milt Vermoeldheid	gescreend worder Na hoofdbestralin deficiëntie. De biji gestart met thyroo	met TSH. go f langdurig steroiden kan er sprake zijn van een cortisol nier-as moet adequaat getest zijn voordat kan worden kine suppletie. Menada is er 5 jan Steroiden is en steroiden st	anguolumina albumine,
Anbevelingen Schildklierfunctie Dystijsdemie Longen Nieren Lever Dzertspeling Mit Vermoelstheid	gescreend worder Na hoofdbestralin deficiëntie. De bijj gestart met thyrox	met TSH. g of langdurig steroiden kan er sprake zijn van een cortisol nier-ss moet adequaat getest zijn voordat kan worden websteriet. Meterset is per 5 jae Dependent - Langemeterset - Langemeterset - Sterongemeterset - S	angvolumina albumine,
Anhavelingen schlicklierfunctie Dystipkdemie Longen Langer Härern Langer Härern Vermoslitheid	gescreend worder Na hoofdbestralin deficiëntie. De biji gestart met thyrox	met TSH. go f langdurig steroiden kan er sprake zijn van een cortisol nier-as moet adequaat getest zijn voordat kan worden sine suppletie. Menned is er fan Menned is er	ingvolumina albumine,

Agemene mormate	Optie 3: De t	oelichting niet tonen
Primaire tumoren Primaire tumor 1	Risico op:	Aanbevolen zorg:
Diagnose gegevens Behandeling Chemo	Schildklierfunctie	Diagnostiek: Laboratoriumonderzoei: TSH on FT4 Minimaal Xx per 2-3 jaar
Recidieven	Dyslipidemie	Diagnostiek:
Secundaire tumoren		 Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL-cholesterol ratio) In ieder grval vana fier 40e leveenjaar
Voorgeschiedenis/ gezondheidsproblemen	Longen	Diagnostiek Longfunctieonderzoek: inclusief flow-volume curve, diffusiecepaciteit en bepeing longvolumina Eenmalig bij start van de LATER follow up, minimaal 1x op volwassen leeftijd
Aanbevelingen Schildklierfunctie Dyslipidemie	Nieren	Diagnostiek: • Analyse glomenulaire functie. Noed: creatinine, barekening GFR. Urine: creatinine, albumine, albumine/freet ratio Minimai II. spr 5 jaar
Nieren Lever	Lever	Diagnostiek: • Laboratoriumonderzoek: ALAT, ASAT, gGT, alkalische fosfatase Eenmelig bij start LATER-follow up
Milt Vermoeidheid	Uzerstapeling	Diagnostiek: • Laboratoriumonderzoek: serum ferritine Emmelig bij start LATER follow up
	Milt	Diagnostiek:
Download IZP		 Aarwullend onderzoek: Bij verdenking op functionele asplenie kan een bepailing van Howell Jolly bodies worden verricht om functionele asplenie te bevestigen.

	2. Hoe moet de toe	licht	ing van de diagnosti	ek w	orden getoond?
Optie 1: Altijo	i de toelichting van de diagnostiek tonen	Optie 2: Op d	te toelichting van de diagnostiek klikken (met een pop-up)	Optie 3: De te	oelichting van de diagnostiek niet tonen
Reice op:	Ambardensog	Rhite-op:	An bendine story:	Balan ap	Air bead as my
SAMfafarch	Organitet - Lineardineronderook TMI nr/TH Michael Scor 2-3 par Teddeting	Schildcorbector	Bagnarist. • Literaturardenset: Teren TY Molend Juge 2 Sper Jackson Company	Schliftler Carcle	Degeneration • Laborationarrandemotin 154 ex FTH Millional to per 2-2 june (Regeneration
	 B) UTIR policities of a court spin to odd all capability build be utilized by an empirical sector of provide sector of the court of the test of the court of the		 Upderspectrum Izzael chelenterel, IRII: chelenterol, JDI - chelenterol, triglacetion, trasel sheimberoldhilli: chelenterol rollet the lobel good unartifier the low-cher Sauch lang. 	Larger	Eigide regestraam (on aal Auler over), Mille chaleneer), Lilk shaleneer), Siljpon chalene sill Mille chaleneer of mild bereiter waard avaaf het Abeleneerspoor Obgeschekt
Codpidents	Organitation 1. Lipherspectrum (betall chainsteed, 800, chainesteed, 120, chainesteed, scipturation, strand scholarsee(120), chainesteed colled	. Course	Confunction decoders and interval to evolution on the decoders of the second polyter and the VERS taken approximate the product and the VERS taken approximitized to expredence wheth (at taken approximitized to express approximitized	Merer.	 Emplorcisedensel including website conc. Sife/expectedentering terming is set on its URD/Ritry as, minimal to as released including Dispersion
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	 Net specific ender net her neter regeliers worder, overweigtig regeringen het unterweit wurdter in herhalten 		Sachking	-	 Laboratoriumendercosis: #UR1ASHL gEX alkalha/re/insteamenter
Longen	Compositive Single-released model: Indusief New volume curve; diffusionspecifielt en begaling longerstamina Single-released by the Million cup, national to up intramactive/lipit		Lateratelianendersseiz AUG stielligelit allatische finderane Rennwalg bischet LUTE finders-ge- laniskling	Emologica	Dispendich Dispendich Laboratig bi start uHCH/show so
	haddeng	Conspilling	* Laboratularun de sank server lexitine	0.08	Originant as Annulised and exacts: EC endesiding to function de capitolis han eau trepaling:
	 Herbates bij afwijklegen of op indication 				harden was be regulated on her finnels and sin to have finnels

Mock-ups vraag 3

Hoe moet de anamnese (vragen over medische geschiedenis) worden getoond?

19	Algemene informatie	Aanbevelingen	
10	Primaire tumoren Primaire tumor 1	Risico op:	Aanbevolen zorg:
	Diagnose gegevens Behandeling Chemo	Alopeda 🔿	Anamnase: Bij een bezoek aan de LATER – poli wordt als onderdee en lichamelijk onderzoek specifiek aandacht besteed aan haargroe
	Recidieven	Secundaire huidtumoren	Anamnese: Bij een bezoek aan de LATER – poli wordt als onderdee en lichamelijk onderzoek specifiek aandacht besteed aan verdacht
	Secundaire tumoren	Schildklasfunctia	Anampara: Bil oon herook aan de LATER – poli wordt als opderdee
	Voorgeschiedenis/ rezondheidsproblemen	Sumumerunde	en lichanelijk onderzoek specifiek aandacht besteed aan symptom schildklierfunctie (Appendix).
			Diagnostiek:
	Aanbevelingen Alopecia		 Laboratoriumonderzoek: TSH en FT4 Minimaal 1x por 2-3 jaar
	Secundaire huidtumoren Schildklierfunctie	Dyslipidemie	Anamnese: Bij een bezoek aan de LATER – poli wordt standaard ee afgenomen en wordt volledig lichamelijk onderzoek verricht (Appe
	Dyslipidemie Longen Nieren Lever		Diagnostisk: • Lipiderspectrum (totaal cholesterol, HDL-cholesterol, LDL-cho cholesterol/HDL- cholesterol ratio) In leder geval vanaf het 40e levensjaar
	Uzerstapeling Milt Mond (rabit	Longen	Anamnese: Bij een bezoek aan de LATER – poli wordt als onderdee en lichamelijk onderzoek specifiek aandacht besteed aan pulmona
	Vermoeidheid		Diagnostiek: • Longfunctieonderzoek: inclusief flow-volume curve, diffusiecapu Eenmalig bij start van de LATER follow up, minimaal 1x op volwa
	Download IZP	Nieren	Etc.

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totaal

10	Algemene Informatie	Aanbevelinger	1
19	Drimpice tumpice	Optie 2: Op de ar	amnese klikken (met een pop-up)
	Primaire tumor 1	Risico op:	Aanbevolen zorg:
	Diagnose gegevens	Alopecia	Anamgese 🦾
	Behandeling Chemo	Secundaire huidtumoren	Anamage
	Recidieven	Schildklierfunctie	Anamnese
	Secundaire tumoren		Diagnostiek:
	Voorzeschiedenis/		Laboratoriumonderzoek: TSH en FT4 Minimaal 1x nor 2,3 jaar
	gezondheidsproblemen	Dyslipidemie	Anamnese
	Aanbevelingen		Diagnostiek:
	Alopecia Secundaire huidtumoren		 Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL-cholesterol ratio) In ineffer eneral vanof far4 dire levensiaer
	Schildklierfunctie Dyslipidemie	Longen	Anamnese
	Longen		Diagnostiek:
	Lever		 Longfunctieonderzoek: inclusief flow-volume curve, diffusiecapaciteit en bepaling longvolumina
	Uzerstapeling Milt		Eenmalig bij start van de LATER follow up, minimaal 1x op volwassen leeftijd
	Mond/gebit	Nieren	Anamnese
	Vermoeidheid		Diagnostiek:
			 Analyse glomerulaire functie. Bloed: creatinine, berekening GFR. Urine: creatinine, albumine, albumine/kreat ratio
	Download IZP		Minimaal 1 x per 5 jaar
		Lever	Etc.

	Optie 2: Op de ar	n namnese klikken (met een pop-up)
Secundaire tumoren	mnese:	Xx
Aanbevelingen Alopecia Secundaire huidtumoren	aargroeiproblemen (Appe	endix). Lipidenspectrum (totaal cholesterol, HOL-cholesterol, LDL-cholesterol, trighcerider, totaa cholesterol/HDL-cholesterol ratio)
Aanbevelingen Alopecia Secundaire huidtumoren Schildklierfunctie Deelinklemie	aargroeiproblemen (Appe	Hold tereo/HOL cholestered, HOL-cholestered, LOL-cholestered, triglyceridee, totaat cholestereo/HOL cholestered atts) in leder gread warat het 60e levenspaar Anamonee
Aanbevelingen hi Alopecia Secundaire huidtumoren Schildklierfunctie Dyalipidemie Longen	aargroeiproblemen (Appe	endix
Aanbevelingen hi Alspecia Secundarin huistummen Schildklierfunctie Dysliptiernie Longen Nieren Lever Lever	Longen	endix}
Aanbevelingen hit Atopecia Secundarin huldtumeren Schildkliefunctie Dyslipdemis Longen Nitren Lever Lever Liverstagning Mit Mond/cabit	aargroeiproblemen (Appe	end(x)
Andevelingen hi Alopecia Secundarie Nublitumieren Schliftkerfunctie Dysligteenne Langen Nieren Langen Jasertappling Alitt Mond gebit Vermesällend	aargroeiproblemen (Appe	end(ix); - chipdisequencies (biological chipdiseter), bits, chipdisetere), bits, chipdisetere), bits, chipdisetere), bits, chipdisetere), bits, chipdisetere), bits, bits, chipdisetere), bits, bits, chipdisetere), bits, bits
Anahoralingan hi Alaparia Sasuakira bukhtunaran Sasuakira bukhtunaran Dydipalaenin Langan Norra Langan Maran Maran M	aargroeiproblemen (Appe	end(x). End(x)

Algemene informatie	Aanbevelinge	n
Polyaction designed as	Optie 3: De anar	nnese <u>niet</u> tonen
Primaire tumoren	Risico op:	Aanbevolen zorg:
Diagnose gegevens	Schildklierfunctie	Diagnostick:
Behandeling Chemo	afwezig	 Laboratonumonoerzoek: ISH en E14 Minimaal 1x per 2-3 jaar
Recidieven	Dyslipidemie	Diagnostiek:
Secundaire tumoren		 Upidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL-cholesterol ratio) In iden great vanaf het 40 leivensfaar
Voorgeschiedenis/	Longen	Diagnostiek
gezondheidsproblemen		 Longfunctieonderzoek: inclusief flow volume curve, diffusiecapaciteit en bepaing longvolumina Eenmalig bij start van de LATER follow up, minimaal 1x op volwassen ieeftijd
Aanbevelingen	Nieren	Diagnostiela
Schildklierfunctie Dyslipidemie		Analyse glomerulaire functic. Bloed: creatinine, berekening GFR. Urine: creatinine, albumine, albumine/kreat ratio Minimal 1 x ner 5 kar
Longen	Lever	Diagnostiek:
Nieren Lever		Laboratoriumonderzoek: ALAT, ASAT, gGT, alkalische fosfatase Eenmalig bij start LATER-follow up
Uzerstapeling	Uzerstapeling	Diagnostiek:
Vermoeidheid		Laboratoriumonderzoek: serum ferritine Eenmalig bij start LATER follow up
	Mile	Diagnostiek:
Download IZP		 Aanvullend onderzoek: Bij verdenking op functionele asplenie kan een bepaling van Howell Jolly bodies worden verricht em functionele asplenie te bevestigen. Afweteleheid van Howell (Jolly bodies subt echter een functionele asplenie niet uit

	5.1100 110	oet de	anamnese worde	n geto	getoond?	
Optie 1: Altijd de	anamnese tonen	Optie 2: Op de ana	amnese klikken (met een pop-up)	Optie 3: De ana	mnese niet tonen	
Faita op	Aarbeidenceg	Raise op	Authentike sog	Raise apr	Amboules sog	
Alignia 🖂	American 34 erectorised any de LEDA - poil wordt als enderdorf van de aligebreide one-recen-	Foceda	National Contractory of the Institute of			
	and the second standard and the second of the second standard st		- N	Scholen, Acta	(villenges	
	mithawdijk undetterk specifiek aandudit besterd aan koargoorgestienen (Pppendir).	Securitain Scale ancese		Augures desig	Laboratorian Laboratorianondersselb. TBH as FTH Minimate Tay over 2-1 (per	
Securidae Indiana-Im	en itshanet(k andetaeti specifek aandadi kested aan kaagporge tileven pypenda). Aanmane 19 een insent aan in 1939 - pil ward als endetiet verde uigdende onerneere a-likanetik enderseri specifik aandade kerned aan welse in kuldelelingen kogenitu	Security for another STORE Partie	North Carlos	Tycipitress	Composition Colonatorian content THI on FTH Minimum Tay per V-1 (part Origenetical)	
translat lualizations	en Urbanetijk ondersteit spechen andrakt bestend aan kongroepentieven. Papenske Anerenam ijk een invest aan in (ASUR - ook werd als vakinder van de vijgdenske soarenere en Urbanetijk ondersteit spechen aandrakt bestend aan verde te kolderleijkogen jegeende	Securities for an one	territy Name	Tyriyaliveso	Ungensteen Lidensacherenderscelt TBF en F21 Misseacherenderscelt TBF en F21 Misseacher Misseacherendersceltung Misseacher - Lidensecherendersceltung - Lidensechere	
Scolaber Audionerity	an influencing conditioners careful a analytic to tend on transport of therein Types during. Answerse of environment and the ANNE of an analytic conditioners and an approximation of the analytic of the ana	Secondate facilitation SIGBERATE	toni Q Nuclear Dependent • Unternet accorde ("Silenci 14 Metanal Josep 3. Sanc	Tyripdees	Volgenstein Volgenstein I. Lakostinkersonkersonk TBE en FEE MicinaelTis per 2-1 juer Obigenstein Undersonschlaft, denkerson (J. EE, chalemers), LDL, chalemers), sign chalemers(J. EDL, which end viel) In their men and under the formulaer	
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Mock-ups vraag 4

Hoe moeten 'voorlichting en advies', 'awareness andere afwijkingen', en 'acties bij gevonden afwijkingen' worden getoond?

Primaire tumoren Primaire tumor 1 Diagnose gegevens Bohandeling Chemo Recidieven	Optie 1 Risico op: Longen	: Altijd de di Behandeld met: BCNU, CCNU, busulfan, bestraling op de Joneen, allogeno	rie elementen t Kans op: Awareness Longfunctiestoornisse n en progressleve	Anhevolen zorg: Disgnostiek:
Diagnose gegevens Behandeling Chemo Recidieven	Longen	BCNU, CCNU, busulfan, bestraling op de loneen, alloeene	Longfunctiestoornisse n en progressieve	Diagnostiek:
Vermoeidheid Vermoeidheid Vermoeidheid Schildlikerfunctie Dystipidemie Longen Nieren Lever Uzerstapeling Mitt Vermoeidheid		SCT, of chirurgen van de longen of het thoraxskelet	Conditioning une lega construction operations (laijvoorbeeld üplem amarcole) bij suchvors die behandeld zij met bioengriken an ente bongefiken se longefikense	Indipationalization of the one of the one of the second seco

Algemene informatie	Optie 2: Op de dri	e elementen klikken (met een pop-up)
Primaire tumoren Primaire tumor 1	Risico op:	Aanbevolen zorg:
Diagnose gegevens	Longen	Diagnostiek:
Behandeling	Awareness	 Longfunctieonderzoek: inclusief flow-volume curve, diffusiecapaciteit en bepaling
Chemo	Voorfichter en advies	longvolumina
Recidieven	Acties bij gevonden afwijking	Eenmailg bij start van de LALEK follow up, minimaal 1x op volwassen leeftijd en
Secundaire tumoren	Nieren	Diagnostiek
	Awareness	 Analyse glomerulaire functie. Bloed: creatinine, berekening GFR. Urine: creatinine,
Voorgeschiedenis/	Voorlichting en arbies	albumine, albumine/kreat ratio
gezondheidsproblemen	And a fill an and a shall be	Minimaal 1 x per 5 jaar
	Access of Benomen anathenia	en
Aanbevelingen	Lever	Diagnostielr
Schildklierfunctie	Automatics	Laboratoriumondornelle ALAT ASAT oCT elitelitethe forfatore
Dyslipidemie	Awareness	Eenmalig bij start LATER-follow up
Longen	Voorlichting en advies	
Nieren	Acties bij gevonden afwijking	en
Lever		
Uzerstapeling	Uzerstapeling	Diagnostiek:
MIIT	Awareness	Laboratoriumonderzoek: serum ferritine
vermoeidhéid	Voorlichting en advies	Eenmang bij start EALER fonow up
	Acties bij gevonden afwijking	en
0 1 1/70		

	Aanbevelingen Optie 2: Op de drie elementen klikken (met een pop-up)				
		Aanbevolen zorg:			
Recidieven B Secundaire tumoren Voorgeschiedenis/ gezondheidsproblemen	ehandeld met tenminste één van BCNU CCNU Busulfan Bestraling op de longen Allogene SCT Chirurgie van de longen of het t	de volgende:			
Aenbevelingen Schildklierfunctie K Dyslipidemie Longen Nieren Lever	ans op: Longfunctiestoornissen Progressieve longfibrose na toe tijdens narcose) bij survivors die met longfibrose	diening van hoge zuurstof concentraties (bijvoorbeeld e behandeld zijn met bleomycine en reeds bekend zijn			
Uzerstapeling					

Algemene informatie	Aanbevelingen Optie 3: De drie ele	menten <u>niet</u> tonen
Primaire tumoren Primaire tumor 1 Diagnose gegevens Behandeling Chemo Recidieven	Risico op: Longen Awareness + voorlichting en advies + acties afwerte	Asshavation mag: Desportial: - Longfunctiondersamic inclusion floor-volume curve, diffusionapactarit on bepaling long-durations long-durat
Secundaire tumoren		Analyse glomerulaire functie. Bloed: creatinine, berekening GFR. Urine: creatinine, albumine, albumine/kreat ratio Minimaal 1 x per 5 jaar
Voorgeschiedenis/ gezondheidsproblemen	Lever	Diagnostiek: • Laboratoriumonderzoek: AL/J, AS/J, gGT, alkalische fosfatase Eenmalig bij start LATER-follow up
Aanbevelingen Schildklierfunctie Dyslipidemie Longen	Uzerstapeling Milt	Disgnostiek: Laboatardiumonderzoek: serum ferritise Eesmailig bij start LATER follow up Disgnostiek:
Nieren Lever		 Aanvullend onderzoek: Bij verdenking op functionele asplenie kan een bepaling van Howell Johj bodies worden verricht om functionele asplenie te bevestigen. Afwezigheld van Howell Johy bodies sluit echter een functionele asplenie niet uit
Uzerstapeling Milt Vermoeidheid	Vermoeidheid	Diagnostiek: • Overweeg bij vermoeldheidsklachten een gevalideerde vragenlijst (bijvoorbeeld PROMIS fatigue, PEDSQL fatigue, Checklist individual Strength) af te nemen
Download IZP	Schildklierfunctie	Diagnostiek: Laboratorlumonderzoek: TSH en FT4 Minimaal 1x per 2-3 jaar
	Dyslipidemie	Etc.

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4. Hoe moeten 'voorlichting en advies', 'awareness andere afwijkingen', en 'acties bij gevonden afwijkingen' worden getoond?

Optie 1	Dytia J: Altijd de drie elsmanten tonen Oyti				iementen kilkien (met een pop-up)	Optie 3: De drie elerr	writen <u>niet</u> tenen
Fabric P	Behandeldines	Rate op Generation	Automation ang	Raise ap	Anthenier sog	Partie op.	As discular step
largen	90%2.COM, boolin, Lantaling quint forgers, chippens CC, 4 rhitrogens CC, 4 rhitrogens For the forgers and de langues of het thereacticle	Long Andre Zoon aue composition and a composition	Departure in physical and the physical free values are not. In physical and the physical free values are not in the physical and the physical free values are interesting and the physical free physical free values in data are not in the physical free physical free values in the physical free values of the physical free values in the physical free values of the physical free values are in the physical free values of the physical free values of the interesting of the physical free values and the physical free values are interesting of the physical free values and the physical free values are interesting of the physical free values are of the physical free values are interesting of the physical free values are of the physical free values are interesting of the physical free values are of the physical free values are interesting of the physical free values are of the physical free values are interesting of the physical free values are of the physical free values are interesting of the physical free values are of the physical fr	Lager Argument of the second s	Personal of exploration that histophysical constraints and an important interfaction and a set of the first set of exploration with at the set of the set of the Mersonal 1 - Set of the set of the Mersonal 1 - Set of the set of the Mersonal 1 - Set of the set 1 - Set of the	Terrer Terrer Terrer Terrer Terrer Terrer Terrer Terrer Terrer Terrer Terrer Terrer Terrer Terrer Terrer	The proof. If you have a series of histographics a looping of the series of histographics and histogra
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How.	Cm.					[tiohana	10

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Mock-ups vraag 5

Hoe moeten de onderwerpen chronische pijn en gezonde leefstijl worden getoond?

Extra informatie: Dit zijn onderwerpen die van toepassing zijn op alle survivors.

Algemene informatie	Aanbevelin	Aanbevelingen				
Primaire tumoren	Optie 1: Altijd	de twee onderwerpen tonen				
Primaire tumor 1	Risico op:	Aanbevolen zorg:				
Diagnose gegevens Behandeling Chemo	Schildklierfunctie	Diagnostiek: • Laboratoriumonderzoek: TSH en FT4 Minimal Xx eer 2-3 jaar				
Recidieven	Dyslipidemie	Diagnostiek:				
Secundaire tumoren		Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL-cholesterol atai) In leder gread vanaf het de loevensjaar				
Voorgeschiedenis/ gezondheidsproblemen						
Aanbevelingen Schildklierfunctie Dyslipidemie Longen Nieren	Lever	Degestatic Laborationworkeranic AAT, KAT, gGT, alkalade forfazae formalig bi gast IAT8 follow up Digestatik Laborationworkeranick, serum ferritire				
Lever	a.cole	Disconstick				
Uzerstapeling Milt Vermoeidheid	in the	 Annvalierd oederzoek: Bij verdenking op functionele asplenie kan een bepaling van Hovell Jolly bodes worden verricht om functionele asplenie te bevestigen. Afvezigheid van Hovell jolly bodies sluit echter een functionele asplenie niet uit 	Γ			
Chronische pijn	Chronische pijn	Anamnese:				
Gezonde leefstijl		 Vraag altijd naar pijnklachten 				
Download IZP	Gezonde leefstijl	Advies: Geef voorlichting over een gezonde leefstijl				

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Primain Diagnos Behand Chemo Recidiev Secundali Voorgesci gezondhe Aanbevel Schildkh Dyslipid Longen Nieren Lever Uzerstaj Milt Vermoe Chronis

formatie	Aanbevelin	Aanbevelingen						
ioren	Optie 2: Op de	e twee onderwerpen klikken (met een pop-up)						
mor 1	Risico op:	Aanbevolen zorg:						
egevens g	Schildklierfunctie	Diagnostiek: • Laboratoriumonderzoek: TSH en FT4 Minimal Ix per 2-3 jaar						
	Dyslipidemie	Diagnostick:						
umoren		 Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL-cholesterol ratio) In locder groul usand her 40e levensjaar 						
lenis/ problemen		a.						
en lunctie	Lever	Diagnostick: • Laboratoriumonderzoek: ALAT, ASAT, gGT, alkalische fosfatase Eenmelig bij situt LATER-follow up						
16	Uzerstapeling	Diagnostiek:						
		Laboratoriumonderzoek: serum ferritine Eenmalig bij start LATER follow up						
ng	Milt	Diagnostiek:						
eid pijn	Chronische nin	Aanvillend onderzoek: Bij verdenking op functionele asplenie kan een bepaling van Howell Jolly bodies worden verricht om functionele asplenie te bevertigen. Afvezigheid van Howell jolly bodies sluit echter een functionele asplenie niet uit						
efstijl	3							
1 IZP	Gezonde leefstijl							

	Aanbevelin	
	Optie 2: Op de	e twee onderwerpen klikken (met een pop-up)
ezondheidsproblemen Ar	namnese:	23 N
•	Vraag altijd naar pijnklaci	Diagnostielic K
Aanbevelingen Schildklierfunctie	Vraag altijd naar pijnklaci	Lagnostice: Laboratoriumondezzoek: ALAT, ASAT, gGT, sikalische forsfatare Einminälg bij sint URTER-foliou up
• Aanbevelingen Schildklierfunctie Dyslipidemie	Vraag altijd naar pijnklaci	ttem Vargeostesse - Liconstructurerederatede ALAS, ASAS, pGT, alkalische festistate Erennalig bij start LATER-ALAS, ASAS, pGT, alkalische festistate Diagnostiste
Aanbevelingen Schildklierfunctie Dyslipidemie Longen Nieren	Vraag altijd naar pijnklaci	User User usersenses:
Aanbevelingen Schildklierfunctie Dyslipidemie Langen Nieren Lever Utverteneling	Vraag altijd naar pijnklach	Comparison C
Aanbevelingen Schildklierfunctie Dyslipidemie Longen Nieren Lever Uzerstapeling Milt Vermoeidheid Trincie für 20	Vraag altijd naar pijnklad Internapeling Mite	Components Log Dapaments Components
Aanbevelingen Schildklerfunctie Dyslipidemie Longen Nieren Lever Dzerstapeling Milt Vermoeldheid Chronische pijn Gezonde leefstij	Vraag altijd naar pynklad Interntapeling Mitt Crossing By Crossing	Components Components Dargements - Laborationsreaderstands. ALX, ALX, gCC, shallsche fonderse Innered (g) parts CATER follows op Dargementski - Laborationsreaderstands strengt fortfitter Dargementski - Laborationsreaderstands strengt fortfitter Dargementski - Laborationsreaderstands strengt fortfitter Dargementski - Dargementski Dargementski - Aussell and analyzation op fortstands angleriste to investigation, Johnes und starts Johnes and Startstands and Startstandstandstandstandstand

Algemene informatie	Aanbeveling	en
Primaire tumoren	Optie 3: De tw	ee onderwerpen niet tonen
Primaire tumor 1	Risico op:	Aanbevolen zorg:
Diagnose gegevens Behandeling Chemo	Schildklierfunctie	Diagnostick: Laboratoriumonderzoek: TSH en FT4 Minimal 1x per 2-3 jaar
Recidieven	Dyslipidemie	Diagnostiek:
Secundaire tumoren		 Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL-cholesterol ratio) In ieder seevel vanel het 40e levensiaar
Voorgeschiedenis/		
gezondheidsproblemen	-	
Aanbevelingen	Lever	Diagnostiek:
Schildklierfunctie		 Laboratoriumonderzoek: ALAT. ASAT. gGT. alkalische fosfatase
Dyslipidemie		Eenmalig bij start LATER-follow up
Longen	Uzerstapeling	Diagnostiek:
Nieren Lever		Laboratoriumonderzoek: serum ferritine Eenmalig bij start LATER follow up
IJzerstapeling	Milt	Diagnostiek:
Milt Vermoeidheid	Chronische pijn er gezonde leefstijl afwezig	Annullend onderzoel: Bij verdenking op functionele asplenie kan een bepaling van Howell Jolly bodies worden vericht om functionele asplenie te bevestigen. Afwezigheid van Howell (jol) bodies Julie Lehter een functionele asplenie niet uit
	Vermoeldheid	Diagnostiek:
Download IZP		Overweeg bij vermoeldheldsklachten een gevalldeerde vragenlijst (bijvoorbeeld PROMIS fatigue, PEDSQI, fatigue, Checklist individual Strongth) af to nemen

5. Hoe moeten de onderwerpen chronische pijn en gezonde leefstijl worden getoond?								
Ontin 1: Abild d		Ontin 7: On de t		Ontia 3: De twee				
Optie 2. Altoju ul	Talente entre entre la content	Barry .	Tastasia vir	Times.	Antonio arr			
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	-			-	-			
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there shape long	Digrathic	therapping	Expension	Technolog .	Amula			
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MR	Digrantali	101	Dapadak	100	Amond			
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	1 bez-soorieting over eer gookra tedel)							

Mock-ups vraag 6

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Hoe moet het richtlijn-boekje (een overzicht met alle elementen van het onderwerp als figuur) worden getoond?

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Bijlagen van de aanbevelingen Optie 1: Altijd het richtlijn-boekje bij de bijlagen tonen

Primaire tumoren Primaire tumoren Primaire tumoren Besundaire tumoren Vorgeschiedendig gesondheitsprobleme Schiedkiernheits Daabevelingen Besingen Besingen

sus-based richtlign voor followop van die achtiktlikerfunctie Na nadiothenspie op die schiktlike, inclusief TM (conpact) dosis) Na behandeling met andosactief (oslim) val skal abate tenzingsi Na thenspeutsche ABBG thenspie (I-131 ABBG). ABBG gebruikt bij dispositische ondersochen (ov ABBG stanz) gedt gem verhoogd risico op hypothyrecidie als adere voorzengemaartegene genomen zijn.

Na allogere stamolitransplantatie
 Na volledige thyroidectomis. schildkiertumoren worden primair door de endocrinoloog
behandeld en vervolgd. Na totale thyreoidectomie bestaat direct post-operatief een risico
op primaire hypoparathyreoide.

Hypothyreoidie

:

Na radiotherapie op de schildklier, inclusief TBI (ongeacht do Na behandeling met radioactief jodium (I-131 ablatie therapi Na MIBG therapie (I-131 MIBG)

Na allogene stamceltransplantatie
 Na volledige thyroïdectomie^s
 Hyperthyreoïdie

Na radiotherapie op de schildklier, inclusief TBI (ongeacht dosis)
 Na allogene stamceltransplantatie
 oorlichting en advies

 Oren <u>wommuna</u>ciwe av vernoope kan op ver avgerade schladaertericke er de mogelijke symptomen die hierbij kannen optreden <u>Bespresk</u> bij vrouwen met een verhoogd risko op hypothyreoidie of bij reeds bekende hypothyreoidie het belang van het bepalen van TSH en FT4 voorafgaande aan en tijdens de

Associated condensate: Impact justify the FFR: Expansion of the second state of the second st	Prir Pi D Bi Cl Ri Sec Voc	maire tumoren irmaire tumor 1 lagnose gegevens ehandeling hemo ecidieven undaire tumoren orgeschiedenis/	Risiee op: Schildklierfunctie Vulledige richtigen Volledige richtijn	Antherwise neg Dagenetels: Likewaterkenederstel: 15H en FT4 Likewaterkenederstel: 15H en FT4 Dagenetels: Carponie frager 2-3 jaar Dagenetels: Linder part own frage 1-breakered retabil Linder part own frager 2-3 jaar Dagenetels Linder part own frager 2-3 jaar Dagenetels: Longiture forderstel: linduist ffou-volume curve, diffinitespatielite in begeling
 Na hoofdbestraling of langdurig steroiden kan er sprake zijn van een cortsol deficientie. De bijnier-as moet adequaat getest zijn voordat kan worden gestart met thyroxine suppletie. 	Sec	undaire tumoren orgeschiedenis/	Longen Volledige richtlijn	In idele gevlaraf het 40e levensjaar Diagnostiek Longfunctieonderzoek: inclusief flow-volume curve, diffusiecapaciteit en bepaling
at moet er gredaan worden als er afwijkingen gevonden worden? Bij FT4 buten het referenteinterval en /of bij TSH > 10: verwijs naar endocrinoloog. Dij een TSH 5-10 met normaal FT4 en geen klachten: herhaal het TSH binnen 3 maanden	gez Aar	ondheidsproblemen nbevelingen	Nieren	longvolumina fenmalig bil Disgnostieli
vervire) by herhade affejende waarden naar endocrinolog enterledende zieligie De bekens based richtlijn voor follow aan extendere scriibilisetrumoren (Cinici) E. bidrens based richtlijn voor follow aan extendere scriibilisetrumoren (Cinici) E. bidrens based richtlijn voor guberta praecox (Cinici)	St D Lt N Lt	childklierfunctie yslipidemie ongen Ieren ever	Valledige richtlijn Lever Valledige richtlijn	Analog dynamidain functi Billed matrixinis, benkening GFA, Urine constituine, albumie/crant ato Analog and a sparse and Matrixing and a sparse and Dagnostickt Lakontonumontement: AUX, AUX, GFT, skaliteche forfatase terminälig bil art. AURH-folton up
Conservo based richtlin voor follow op van dyslipidamie uj weet • Na 1701 • Na 155CT	Li: M Vi	zerstapeling liit ermoeidheid Deweleed 170	Uzerstapeling Volledige richtlijn Milt Volledige richtlijn	Diagnotiski Likovatoriumonderatodi: aruun ferrithe <u>bernnik</u> bj stat LATER follow up Diagnotiski Aunuident onderatedt: Bij verdenting op functionele asplenie kan een beguling van Hovell Juliy
				 a) (PT Class Are for effective for effective for a set of controllog. b) (PT Class Are for effective for effective for an effective for an effective for effec



	Ontio 3: Hot ric	htliin-hookie niet tonen
Primaire tumoren	Bieles and	
Primaire tumor 1	Hanco op.	Annoevour zog.
Diagnose gegevens	Schlidklierfunctie	Diagnostiek:
Behandeling		 Laboratoriumonderzoek: TSH en FT4
Chamo		Minimaal 1x per 2-3 jaar
Desidieure	Dyslipidemie	Diagnostiek:
Kecialeven	boekie	 Upidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaa
	t afwezig	cholesterol/HDL- cholesterol ratio)
Secundaire tumoren		In ieder geval vanaf het 40e levensjaar
	Longen	Diagnostiek
Voorgeschiedenis/		 Longfunctleonderzoek: inclusief flow-volume curve, diffusiecapaciteit en bepaling
gezondheidsproblemen		longvolumina
		Eenmalig bij start van de LALEK follow up, minimaal 1x op volwassen leeftijd
Aanbevelingen	Nieren	Diagnostiek:
Schildklierfunctie		 Analyse glomerulaire functie. Bloed: creatinine, berekening GFR. Urine: creatinine, album
Dyslinidemie		albumine/kreat ratio
Longon		Minimaal 1 x per 5 jaar
Nierop	Lever	Diagnostiek:
Neren L		 Laboratorlumonderzoek: ALAT, ASAT, gGT, alkalische fosfatase
Lever		Eenmalig bij start LATER-tollow up
Uzerstapeling	Uzerstapeling	Diegnostiek:
Milt		 Laboratoriumonderzoek: serum ferritine
Vermoeidheid	AAR+	Eenmalig bij start LAIEK follow up Dismostiek
	IVIII L	Diagnostiek:
		 Aanvullend onderzoek: Bij verdenking op functionele asplenie kan een bepaling van Howell
Download IZP		bodies worden verricht om runctionele asplehle te bevestigen. Aforeniekeld van Unseell jelb konding skeit geben van forentiegele anderen sint wit

6. Hoe moe	t het i	richtlijn-boekje wor	den ge	toond?
ptie 1: Richtlijn-boekje bij de bijlagen tonen	Optie 2: Op richtl	in-boekje klikken (met een pop-up)	Optie 3: Richtlijn-b	pekje nist tozen
	Rose op:	åarlarvelen mg	Roose ep.	Auribevelan 2015
researa basel chiefformer follen un de additió financia Mai Na tachonagia es de cardinica, inclueir TBI (peganot Social) Na la brander para estadoción falora (SSI 2014) El tropical Na tachonade para estadoción falora (SSI 2014) El tropical Na tachonade para estadoción falora (SSI 2014) El tropical Na tachonade para estadoción falora (SSI 2014) Na terroparte al tropica (SSI 2014) Na terroparte al terroparte al tropica (SSI 2014) Na terroparte al terropar	Coldifications a	Expensité Université de la construit de la con	Dridtliertunte Opdynikeers Breite Annig	Papertiel Manual Spec XI (an ITA Water and Spec XI (an Expension Specific Specific Specific Contents) Water and Specific Specific Contents Specific Specific Specific Contents Specific Specific Contents Specific Specific Contents Specific Specific Contents Specific Conte
 Na valled ge thyratectore app. Na valled ge thyratectoria. Schilddertumovn vorder, prinair door de endocrinolog behandel er vervage. Na totale thyracidectoria bestat direct por operatief een nico or animalin benomeliteredit. 	Trangen Volindige richtlijk	Eligencial i langli orientelessorie industel flow volume turve, diffusiongaschet an langling Interprinten Elemental (a) dart um de VERE fullow op, entitenad its op volumente helikjel Homosofiel	Geogra	Elegencial Stanglorisandratoris industri financolare suran, diffusiosportat es losaling Egyption des Energia (Elegencia) Energia (Elegencia) Elegencia) Elegencia Ele
tile sfutjkingen konnen usor? • Hgouttyrecklike	Volindija robilja	 Analos glonenskie Kuntik, Ukodi oradnies, beskomplift, Ukoc pradnies, alkumse, alkumischnatism Bristinal 5 spin 5 par 	(nar	 Androg glove claim Swote, Bloot: practice, baskening SH, Urinz: practice, albumins, albumins/mast ratio Minimum Trajes Sport
Na rodzistwanje na do na bilakter, kola of TB (nagoste 6 doko) Na tokatolna pre rodzekosta (policie na bilakter 6 teoropie) Na rodze na do na bila (policie na bilakter 6 teoropie) Na rodze na bila (policie na bilakter)	Valodge coldina Une scipeling Valodge coldina	Industrial-international ALM ANA, gift administration for factore Entrangle Inter LUCE-Millow-ge Entrangle Inter LUCE-Millow-ge Entrangle International ALM Inflame Entrangle International ALM Inflame	Oprospelling	Exhaust-kinnediertaals: AAR 2007, gCE shala da faaf taase Exhaust-by Distance (LECE Minus); gE Exhaust-by Distance (LECE Minus); gE Exh
Hapostyredide e Stansfetherspie op de schädtler, inclusief Titt (angesche desk) e Stansfegnen starvorkranspiestate	MR Volkelije richtlje	Engineenial Annotation of an intervententing on Americando anglinolo tara ano hapading ano Horvell Anty- barlan analores envelta ana Americando apatoria ta barentegena. Annotational and andre barbar aluta actuar see Aurocitando apatoria nare et	MR	Dispected - Anvallet ordersek (5) webeing as functions anglesis ken een bepiling van Hovell hdy bedra werder verkiele on Austiende ophiek in bezeingen. Hivesgheid van Hovell july belee duit eiter een functionale anglese men uit

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Mock-ups vraag 7

Hoe moet de onzekerheid van het geven van bepaalde onderwerpen worden getoond?

Extra informatie: Soms is het onduidelijk of bepaalde onderwerpen van toepassing zijn op de survivor door <u>missende patiëntinformatie</u>.

Een voorbeeld is dat bekend is dat de patiënt bestraling heeft gehad, maar het onduidelijk is waar de patiënt is bestraald.

In dit voorbeeld is het onduidelijk of het colon of rectum in het bestralingsgebied heeft gelegen.

	Optie 1: Altijd	l de onzekerheid tonen	
Primaire tumoren Primaire tumor 1	Risico op:	Aanbevolen zorg:	Mate van zekerheid over geven van aanbeveling:
Diagnose gegevens	Schildklierfunctie	Diagnostiek:	Zeker 🏠
Behandeling		 Laboratorlumonderzoek: TSH en FT4 	U
Chemo		Minimaal 1x per 2-3 jaar	
Recidieven	Secundaire	Diagnostiek:	Onzeker Unduidelijk of
Secundaire tumoren	colorectale tumoren	 Fæces occult bloedverlies (FOB-test) ledere 3 jaar, vanaf de leeftijd van 30 jaar 	colon of rectum in bestralingsgebied heeft gelegen
/oorgeschiedenis/	Dyslipidemie	Diagnostiek:	Zeker
gezondheidsproblemen		 Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL- cholesterol ratio) in ieder geval samaf het 40e levensiaar 	
Aanbevelingen	Longen	Diagnostiek:	Zeker
Schildklierfunctie Secundaire colorectale tumoren Dyslipidemie Longen		 Longfunctioenderzoek: inclusief flow volume curve, diffusiecapaciteit en bepeling longvolumina Eenmalig bij start van de LATER follow up, minimaal 1x op volwassen ieertijd 	
Nieren	Nieren	Diagnostiek:	Zeker
Lever IJzerstapeling Milt		 Analyse glomerulaire functie. Bloed: creatinine, berekening GER. Urine: creatinine, albumine, albumine/kreat ratio Minimaal 1 x per 5 jaar 	
Vermoeidheid	Lever	Diagnostiek:	Zeker
		Laboratoriumonderzoek: ALAT, ASAT, gGT, alkalische fosfatase	



	onzekerheid kunnen worden gegeven (met een pop-up)		
		Aanbevolen zorg:	
gezondheidsproblemen Checken! Aanbevelingen Schildklierfunctie	Lonpen	iden, totaal In leder geval variat het 40e levensjaar Diaenostiekt	
gezondheidsproblemen Aanbevelingen Schildklierfunctie Secundaire colorectale tumoren Dyslieldemie	Longen	In finder group vanish frick for treasmynaar The Section 2014	
Aanbevelingen Schildklierfunctie Secundare colorectale tumoren Dyslipidemie Longen	Longen	Iden, includ To todar gould stand from 40th Interrupper Congenerates: * Langedistation Economical by Inter- same AURE Nationary, emittimate Sciency and and any and any and Economical Science (Science Science Science Science Science) Economical Science Scienc	
Aanbevelingen Schikklightuncte Schikklightuncte Dystiptiernie Longen Nieren Laver Laver	Longen Nieren	In telese genet second tests their tensoriespace In telese genet second tests their tensoriespace Elegenetistic Elegeneti	
Annbeweilingen Secundarie celorectale turnoren Dysligtdende Longen Userstepeling Hieren Userstepeling effit	Longen Nieron	In toting group should have been impose In toting group should have been impose In toting group should have been imposed In toting group should be for the should be a sh	
Checkent Ambevelingen Secundederhonste Secundederhonste Longen Hieren Langen Bilt Wermendheid	Longen Nieren Lever	In folier grout ward for this feromytee To folier grout ward for the URIS folier up, minimal 2 sey welvesses leaft)d Togenetisk Angel growteeluit for facts. Block treations, berekening GIR, Urine: creations, abundon, format 1 sey to 5 jair Togenetisk	





Onderdeel 2: layout van het klinisch ondersteunend systeem

Mock-ups vraag 8

Hoe moet de richtlijn-informatie worden getoond?

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Algemene informatie	Aanbevelingen		
	Optie 1: Infor	matie in een tabel	
Primaire tumoren	Risico op:	Aanbevolen zorg:	
Primaire tumor 1 Diagnose gegevens Behandeling	Schildklierfunctie	Diagnostiek: • Laboratoriumonderzoek: TSH en FT4	
Chemo	Dyslipidemie	Minimaal 1x per 2-3 jaar Diagnostiek:	
Secundaire tumoren		Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL-cholesterol ratio) In leder gread vanaf her Kole levensjaar	
Voorgeschiedenis/ gezondheidsproblemen	Longen	Diagnostiel: • Lorgfunctieondersoek: inclusief flow-volume curve, tilfusiecapaciteit en bepaling longvolumina Eennsalig bij start van de IATER foliow up, minimaal 1x op volwassen leeftijd	
Aanbevelingen Schildklierfunctie Dyslipidemie	Nieren	Disgnostiek: • Analyze glomerulairo functio. Blood: croatinino, berekening GFR. Urino: creatinino, albumino, albumine/veex roto Minimali 1x pcr 5 jaar	
Longen Nieren Lever	Lever	Diagnostiek: Laboratoriumonderapek: ALAT, ASAT, gGT, alkalische fosfatase Eenmalig bij stant LATER-follow up	
Uzerstapeling Milt Vermoeidheid	Uzerstapeling	Diagnostiek: • Laboratoriumonderzoek: serum ferritine Eeromalig bil start LATER follow up	
Download IZP	Mit	Diagnostiek: • Aanvullend onderzoek: Bij verdenking op functionele asplenie kan een bepaling van Howell Jolly bodies worden verden die functionele asplenie te bewerigen. Afmediektie ver konzell functionele ander een functionele en functionele statute.	

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8. Hoe moet de richtlijn-informatie worden getoond?

Optie 1: Infor	matie in een tabel	Optie 2: Informatie als losse tekst
Risico op:	Aanbevolen zorg:	Schildklierfunctie Disposifiel:
SchildkTerfunctie	Diagnostalai Labocatoriumonderapela: 13H en F14 Kildenand Invent 2 h loss	 Laboratoriumondensoria 1591 en F16 Minimaal 1s per 2-3 [nor
Dysilpidensie	Normalizati a per 2 + 5 con Diagnostituk Lipidenspectrum (totaal cholesterol, HOL-cholesterol, IDL-cholesterol, trig/poelden, totaal	Dyslipidernie • Diagnotiek:
	cholesteroki/HOL-cholesterol ratio) In leder geval variaf het 40e levensjaar	 Epidemipectrum (totaal cheketerd, HOL chotesterel, IOL chotesterel, trigtycerkim, totaal chotestero(HOL chotester ratio) In oder eval varaf het 40e levensiaar
Longm	Diagneetiak - Longfunctien nierzoek: inclusief flow-volume cunve, diffusieszpaciteit en besafing longoslumina Eenmalig bij start van de LATER follow up, minimaal Izo op volwassen leeftijd	Longen Cosposisk Londorstandermal: Industri Rosseniume rune, diffusionerschaft as benätte (consultation
Nieren	Diagnostisk: • Analyse glomerulaire functie. Bioed: creatinine, benekening GFR, Ukine: creatinine, albumine, albumine/veett rolio Minima J. vord Saar	Eromalig bij stat van de LATER follow up, minimaal 1s op velvensen kertige Nezza - Dragnastiek:
Lover	Diagnettink: Laboratoriumonderasek: ALAT, ASAT, gOT, alkalische fonfatase Eermalis bit kart LAFER-follow vo	Vedpe previous hashis. Note: (reatistic, beaking GPR, Litre) (reatistic, atturned, atturned
Uzerstapeling	Diagnottick: Laboratoriumonderaseki, seram feerttise Enermelik bil start LAERE follow op	 skapnolene Laboranniamondeszenik: AUXE ASAE gGE, alkalische fosfatzon Eenmalig bij start LATER-follow up
Mit	Diagnetisk: Azerolited codecasel: Bij verdenking op functionele applerie kan oen topuling van Houetl Jolly bodies worden wericht en functionele auplerie te beweitigen. Alfwerdigheid can Houetij Jolf Jocim sluit erdiner een functionele auplerie niet uit.	Lever Dispositivic Labortoniumondessol: ALXI, AAXI, gGL, alkalische fosfitase terminis (i i i just LAXID-fosforvup



Risico op:	Aanbevolen zorg:
Schildklierfunctie	Diagnostiek:
	 Laboratoriumonderzoek: TSH en FT4 Minimaal 1x per 2-3 Jaar
Dyslipidemie	Diagnostiek:
	 Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, trigtyceriden, totaal cholesterol/HDL-cholesterol ratio) In ieder geval varaf. het 40e levensjaar
Longen	Diagnostiek
	 Longfunctieonderzoek: inclusief flow-volume curve, diffusiecapaciteit en bepaling longvolumina Eenmäig bij start van de LAIER follow up, minimaal 1x op volwassen leeftijd
Nieren	Diagnostiek:
	 Analyse glomerulaire functie. Bloed: creatinine, berekening GFR. Urine: creatinine, albumine/treat ratio albumine/treat ratio Milimaal 1 x per 5 jaar
Lever	Diagnostiek:
	 Laboratoriumonderzoek: ALAT, ASAT, gGT, alkalische fosfatase Eenmalig bij start LATER-follow up
Uzerstapeling	Diagnostiek:
	Laboratoriumonderzoek: serum ferritine Eenmalig bij start LATER follow up
Milt	Diagnostiek:

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Appendix D: Original quotes from healthcare professionals and its translations

Sub-themes	Original quotes	Translated quotes
Rationale,	Ik denk dat het wel goed is, als je je	I think it is good if you are wondering
diagnostics,	afvraagt waarom het systeem iets	why the system is recommending
overview with all	aanbeveelt, omdat jij misschien wat	something, because you might have
elements of one topic	anders had bedacht, dat je kan zien	thought of something else, that you can
as figure, and	waarom dat zo is. En of dat (gedachte)	see why that is. And whether that
uncertainty	dan klopt, of dat je het (CDSS) ermee	(thought) is correct, or whether you
diagnostics	eens bent.	agree with it (CDSS).
Health education and	Ze moeten ook zelf een beetje blijven	They also need to think a bit for
advice, explanation	nadenken. Wat ik vind dat het	themselves. I do not think the support
diagnostics, and	ondersteunend systeem is, het is niet	system is meant to deploy the whole
topic healthy	om het hele (richtlijnen) boekje in te	(guidelines) booklet, but more to help
lifestyle	zetten, maar meer om te helpen welke	with what diagnostics you should do.
	diagnostiek je moet doen.	
Other health	Ik denk dat je overal zo weinig	I think you should include as little text
abnormalities and	mogelijk tekst moet doen, anders lezen	as possible, otherwise people won't
actions if health	mensen het niet meer.	read it anymore.
abnormalities are		
found		
Questions medical	Ik vind het wel belangrijk dat het	I do think it is important that it
history	(vragen anamnese) bij elke patiënt in je	(questions medical history) appears in
	overzicht kom te staan, zodat je ernaar	your overview for every patient, to
	gaat vragen.	ensure you will ask about it.
Diagnostics	Sommige mensen hebben natuurlijk	Of course, some people have very little
	heel weinig tijd. En je ziet het	time. And you just see it (diagnostics)
	(diagnostiek) hier gewoon (in het	here (in the overview), and you
	overzicht), en je weet meteen wat je	immediately know what to request or
	moet aanvragen of doen.	conduct.
Uncertainty potential	Misschien mag het teken ook wel iets	Perhaps the figure may also be a bit
topics	subtiels zijn. Een uitroepteken lijkt ook	more subtle. An exclamation mark
	wel dat er heel iets ernstigs aan de hand	seems like something very serious is
	is, vooral met zo'n driehoekje. [] Nu	going on, especially with such a
	lijkt het net of deze aanbeveling het	triangle. [] Now it seems that this
	belangrijkst is, dus dat je daar als eerst	recommendation is the most important,
	naar moet gaan kijken, alsof de patiënt	that you should look at that first, as if
	hier (topic) het hoogste risico op heeft.	the patient has the highest risk on this
		(topic).
Explanation	Ik denk dat het (informatie van de	I think it (information from the
diagnostics,	richtlijnen) op een gegeven moment	guidelines) will become your own at
rationale, and health	wel je eigen wordt, maar het is wel fijn	some point, but it is useful to be able to
education and advice	om het terug te kunnen vinden. Dus dan	find it again. So, I really like the option
	vind ik de optie heel fijn dat je erop kan	in which you can click on it. The
	klikken. Dan is het overzicht ook	overview is then also calmer, than that
	rustiger, dan dat alles (informatie) erbij	all information is in the overview.
	staat.	
Topic healthy	Het (gezonde leefstijl) is iets dat je	It (healthy lifestyle) is something that
lifestyle	natuurlijk altijd wel bespreekt. Voor de	you obviously always discuss. For
	duidelijkheid vind ik het heel mooi dat	clarity, I like that you know exactly
	je precies weet wat je moet doen, maar	what to do, but I prefer to have it in the
		way that you have to click on it.

RQ1: How should the elements from the guidelines be presented in a CDSS?

	hij mag van mij wel zo dat je erop moet klikken.	
Presentation of information	Die tabel vind ik echt wel heel inzichtelijk. Ik vind dat je daarmee ook duidelijker ziet wat de organen (onderwerpen) zijn, en wat je daarmee moet gaan doen.	I find that table very insightful. I think that you also see more clearly what the organs (topics) are, and what you should do with them.
Presentation of topics	Ik vind een tabel gewoon overzichtelijk; je ziet het meteen, anders moet ik gaan lopen klikken. En ik doe dat misschien wel, maar doen alle artsen hier het dan ook? Het is gewoon het simpelste, als je er niks voor hoeft te doen.	I just find a table clear; you can see it immediately, otherwise I have to start clicking. And I may do that, but do all the doctors here do that too? It is just the simplest, if you do not have to do anything for it.
	Dat (tabjes) vind ik wel iets overzichtelijk dan weer zo'n hele tabel, waar al die tekst op komt. Als je die tekst niet hoeft te zien, dan is het fijner als het gewoon verborgen is en uitklapt als je het nodig hebt.	I think that (tabs) is more organised than such a whole table, in which all text will be included. If you do not need to see that text, then it is better if it is just hidden and expanded when you need it.

RQ2: What are the perceived benefits and barriers of using a CDSS?

Sub-themes	Original quotes	Translated quotes
Easy access to	Ik denk dat het misschien nog	I think it might be even more accessible
background	laagdrempeliger is, om even je eigen	to check your own pragmatic approach
knowledge	pragmatische aanpak te checken, met	with the guidelines. So as a kind of
	wat er in de richtlijnen staat. Dus als	double check it is good.
	een soort van dubbelcheck is het goed.	
Provision of up-to-	Zeker nu de richtlijnen geüpdatet zijn,	Especially now that the guidelines have
date care	is het fijn om even op de achtergrond te	been updated, it is nice to explore the
	kijken wat de overwegingen waren. Er	background knowledge, to see what the
	zijn misschien in de aanbevelingen ook	considerations were. New information
	nieuwe dingen gekomen.	may have been added to the
		recommendations.
Facilitation of	Ik denk dat het (CDSS) heel mooi past	I think it (CDSS) fits very nicely with
consult preparation	bij wat je nu doet qua voorbereiding,	what you are doing now in terms of
	het gaat je heel veel tijd schelen, want	preparation, because it (applicable
	het (bijbehorende richtlijnonderwerpen)	guideline topics) just pops up.
	popt gewoon op. Soms heb je een	Sometimes, you have a patient, and he
	patiënt, en die komt bij LATER, en die	comes to the LATER (clinic), and you
	ken je eigenlijk helemaal niet, en dan	do not really know him at all, and then
	moet je helemaal in het (patiënten)	you have to go through the whole
	dossier duiken wat er allemaal is	(patient) dossier to find out what has
	gebeurd, en wat (voor behandelingen)	happened, and what (treatments) he has
	die heeft gehad.	had.
Provision of	Ik denk dat het fijn is dat we met z'n	I think it is nice that we all pay
consistent care	allen op dezelfde dingen letten. Ik denk	attention to the same things. I think that
	dat dat nu nog wel heel wisselend is,	it is currently varying a lot, that one
	dat de één (zorgverlener) veel meer	(care provider) is much more focused
	gefocust is op die dingen, en de ander	on those things, and the other is much
	veel meer gefocust op dat. [] En ik	more focused on that. [] And I think

	•	
	denk dat het goed is dat je de	it is good that you all conduct the same
	diagnostiek allemaal hetzelfde doet.	diagnostics.
Time savings	Ik denk dat ik het straks juist heel fijn	I think that I will be very pleased that
	vindt dat de richtlijnen al zijn aangepast	the guidelines have already been
	aan die patiënt, met die aandoeningen.	adapted to that patient, with those
	Nu blader je soms door dat (richtlijnen)	diseases. Currently, you sometimes go
	boekje heen, zeker in het begin toen ik	through that (guidelines) booklet,
	nog niet bekend was, ging ik natuurlijk	certainly in the beginning, when I was
	alles af. Van, hoort dit bij deze patiënt,	not yet familiar, I went through
	hoort dit erbij? En nu (met een CDSS)	everything. Like, does this apply to this
	krijg ik gewoon voorgeschoteld welke	patient, does this apply? And now (with
	onderwerpen allemaal moeten bij de	a CDSS) I am simply presented with all
	patiënt.	the topics that should be applied to the
	r ·····	patient.
Being less prone to	Ze [zorgverleners] maken minder	They [care providers] make fewer
medical errors	fouten: jedere patiënt krijgt werkelijk	mistakes: every patient really receives
	de diagnostiek die ze moeten krijgen.	the diagnosis they should receive. [].
	[] Je vermindert eigenlijk het denken	You are actually reducing the doctors'
	van de dokters dat foutgevoelig is	thinking that is prone to errors
Facilitation of patient	Soms is het ook voor patiënten prettig	Sometimes it is also nice for patients to
participation	om mee te lezen of als ie even laat zien	read along or if you want to show why
purificipation	waarom we een benaalde diagnostiek	we conduct certain diagnostics
	doen	we conduct certain diagnostics.
Increased	Dat is sowieso vind ik een groot nadeel	I think that is certainly a major
dependency on	van alles automatiseren, want ie moet	disadvantage of automating everything.
technology	wel blijven nadenken over de patiënt.	because you have to keep thinking
	Want die patiënt kan ook nog iets	about the patient. That patient may also
	anders hebben gehad, waardoor je toch	have had something else (which is not
	iets moet doen, dat niet in de richtlijnen	in the database), so you still have to
	staat.	conduct certain activities that are not in
		the guidelines.
Difficulty to access	We hebben eerder voor onze	We previously had a system for our
	psychosociale vragenlijsten een	psychosocial questionnaires, in which
	systeem gehad, waarbij je apart moest	you had to log in separately, and that
	inloggen, en dat was voor iedereen	was a hassle for everyone. [] Make
	gedoe. [] Maak het (CDSS) vooral	the CDSS especially easy to access,
	makkelijk toegankelijk, anders is de	otherwise the threshold (to use) will be
	drempel te hoog (om het te gebruiken).	too high.
Undermining of	Wij als artsen voeren echt een gesprek	We as doctors really have a
clinical competence	met ouders, en het is geen vragenvuur.	conversation with parents, and it is not
		a fire of questions.
Question of	Stel nou dat er een fout zit in de	Suppose there is an error in the
responsibility	database, dan kan het mis gaan. Dus	database, then it can go wrong. So, who
	wig is door vorantwoordalijk?	is then responsible?

RQ3: How can a CDSS be implemented in childhood cancer survivorship care?

Sub-themes	Original quotes	Translated quotes
Usable for all care	Ik denk dat er een verschil is tussen	I think there is a difference between
providers	iemand die alleen maar LATER-poli	someone who works full-time at the
	doet, en iemand die incidenteel	LATER-clinic, and someone who
	LATER-poli doet. [] Er zijn ook	works occasionally at the LATER-
	kinderoncologen die één keer in de	clinic. [] There are paediatric
		oncologists who work at the LATER-

	maand LATER-poli doen en die moeten er (CDSS) ook mee werken	clinic once a month, and they also have to work with it (CDSS)
No actions required to use	Het moet ook niet zoiets zijn dat dingen verplicht ingevuld moeten worden, dat je anders niet verder kan. Het moet je	It should not be the case that things have to be filled in mandatory, that you otherwise cannot continue. It should
	vooral ondersteunen en tot dienst zijn, en je moet er geen last van hebben zeg maar.	above all support and serve you, and you should not be bothered by it.
Integration with other systems	In (EPD) doe je de zorg, anders kan iemand anders (andere zorgverlener)	In (EPD) you provide care, otherwise someone else (another care provider)
	alles (informatie) van de patiënt bij elkaar wilt hebben. [] Hier, in de samenvatting (van de patiënt) kan	you want to have all (information) about the patient together. [] Here, in the summary (of the patient), everyone
	iedereen zien wat hij gehad heeft en wat we moeten doen. Als ik het (de informatie) in een ander systeem heb,	can see what they have had and what we need to do. If I have it (the information) in another system, I can
	dan kan ik het zien, maar de rest van de dokters niet.	see it, but the rest of the doctors cannot.
Minimal required change in way of working	Je bent als dokter opgeleid om een bepaald stramien te volgen, en dat zit er zo ingehamerd. Dan ga je niet jouw vragen doorlopen zeg maar, dus het (systeem) moet ergens passen.	You are trained as a doctor to follow a certain pattern, and that is strongly ingrained. Then you do not follow your questions, so the (system) has to fit somewhere.
Ability to note information	We moeten er wel in kunnen schrijven, want soms doe je wel iets, omdat iemand klachten heeft, en soms doe je	We must be able to write in it, because sometimes you do something because someone has complaints, and
	Dan moet je dat wel kunnen aangeven, waarom je afwijkt van de richtlijnen.	because someone does not want to. Then you must be able to indicate why you deviate from the guidelines.
Inclusion of up-to- date guidelines	Als een kleine aanbeveling wordt aangepast, dan passen we dat algoritme aan in het clinical decision support system [], dan kan je dus heel snel veranderen voor de patiënt welke diagnostiek de patiënt moet krijgen. Maar de papieren versie van het richtlijnboekje moet dan net zo snel aangepast worden, en daar voorzie ik wel een probleem. Want dat is een heel ander proces, het updaten van het (richtlijnen) boekje.	If a small recommendation is adjusted, we adapt that algorithm in the clinical decision support system [], so you can very quickly change which diagnostics the patient should receive. However, the paper-version of the guidelines must then be adjusted just as quickly, and I foresee a problem there. Because that is a completely different process, updating the (guidelines) booklet.
engagement to a CDSS	kwaliteitsverbetering. Maar je moet er ook voor zorgen dat de mensen die ermee werken, ook ervaren dat het werk daarmee makkelijker wordt, en niet moeilijker, want dan ben je ze denk ik kwijt.	quality improvement. But you also have to ensure that the people who work with it, also experience that the work becomes easier, and not more difficult, because otherwise I think you will lose them.
Presence of technical support	Ik denk niet dat er heel veel belemmeringen zijn, behalve als de ICT ons in de steek laat. Het is ook belangrijk dat er ondersteuning is, dat als het systeem niet werkt, dat er	I do not think many obstacles exist, unless ICT lets us down. It is also important that there is support, if the system is not working, that someone is

	iemand is die kan helpen om te kijken	available who can help to see what is
	wat er aan de hand is.	going on.
Database with	Wat nou als er toch een fout zit in	What if there is an error in patient
complete and correct	patiëntinformatie, ga je dan de	information, are you then going to offer
patient data	verkeerde zorg aanbieden? Dat kan	the wrong care? That can happen. In
-	gebeuren. Dus in die zin moet dat	that sense, all of that (patient
	allemaal (patiëntinformatie) heel goed	information) has to be checked very
	gecheckt worden, of het allemaal juist	carefully, whether it is all correct.
	is.	

Appendix E: Recommended CDSS design with mock-ups illustrating the different functionalities

Algemene informatie	Aanbevening	
	Overzicht nieuv	<i>w</i> ontwerp
Primaire tumoren	Risico op:	Aanbevolen zorg:
Primaire tumor 1	Schildklastupetia	Disenatials
Diagnose gegevens	Schlickientricce	Distriction of the second se
Behandeling		 Laboratoriumonderzoek: TSH en FT4
Chemo		Minimaal 1x per 2-3 jaar
Recidieven		Rationale
Secundaire tumoren		Toelichting diagnostiek
		Voorlichting en advies
Voorgeschiedenis/	Dyslipidemie	Diagnostiek:
gezondheidsproblemen		 Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL-cholesterol ratio)
Aanbevelingen		In leder geval vanaf het 40e levensjaar
Schildklierfunctie		Rationale
Dyslipidemie		
Secundaire colorectale tumoren		Toelichting diagnostiek
Alopedia Consola lasfatili		Voorlichting en advies
Gezonde reersoji	Secundaire colorectale	Diagnostiek
Nieren	tumoren	 Faeces occult bloedverfies (IFOB-test)
Lever	1.00.00	ledere 3 jaar, vanaf de leeftijd van 30 jaar
Uzerstapeling	Lecop	Betterste
Milt		Rationale
Vermoeidheid		Toelichting diagnostiek
Bulla and		Voorlichting en advies
bijiagen	Alopecia	Rationale
Richtlijnooexje		Voorlichting en advies
	Gezonde leefstijl	Rationale
Download 170		an federal disc

Algemene informatie	Aanbevelinge	en	
Primaire tumoren	Focus: Informat	ie over onderwerp gezonde leefstijl altijd tonen	-
Primaire tumor 1	Risico op:	Aanbevolen zorg:	4
Diagnose gegevens	Schildklierfunctie	Diagnostiek:	
Behandeling		 Laboratoriumonderapek: TSH en FT4 	
Chemo		Minimaal 1x per 2-3 jaar	
Recidieven		Rationale	
Secundaire tumoren		Toelichting diagnostiek	
		Voorlichting en advies	
/oorgeschiedenis/	Dyslipidemie	Diagnostiek:	1
gezondheidsproblemen		 Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL- cholesterol ratio) 	
Aanbevelingen		In leder geval vanaf het 40e levensjaar	
Schildklierfunctie		Rationale	
Dyslipidemie		To Balance descentels	L
Secundaire colorectale tumoren		Idelichting diagnostiek	L
Alopecia Comendo los fatili		Voorlichting en advies	4
Gezonde reelschi			L
Nieren	Gezonde leefstijl 🤇 🥅	Rationale	1
Lever		Voorlichting en advies	L
Uzerstapeling			L
Milt		 Geet voorichting over net belang van een gezonde leefstijl en geet adviezen over: 	L
Vermoeidheid		 con gezona alcott ann astigue losfittii (unpuits questure) anno londaliika houmenrichtiin) 	L
		 ann anview reesul (retwijs eventueer naar anderijke deweegnondijn) ann anview reesul (RMI 18.5 - 24.9 kg/m2) 	L
ijlagen		Adviseer adequate zon/I/V bescherming	L
Richtlijnboekje		 Adviseer 5-maandelijks – jaarlijks tandarts bezoek 	L
		 Ontraad (mee)roken en overmatig alcoholgebruik 	L
Developed 170		 Adviseer vaccinatie volgens het rijksvaccinatieprogramma. Draag zorg voor het inhalen van 	L
Download IZP		vaccinaties na herstel na de oncologische behandeling	L
		Adviseer gehoorbescherming	1

Algemene informatie	Aanbevelin	gen
	Focus: Ration	ale, toelichting diagnostiek en voorlichting en advies
Primaire tumoren		
Primaire tumor 1	via een pop-u	p tonen
Diagnose gegevens	Risico op:	Aanbevolen zorg:
Behandeling		
Chemo	Schildklierfunctie	Diagnostiek:
Recidieven		 Laboratoriumonderzoek: TSH en FT4
		Minimaal 1x per 2-3 jaar
Secundaire tumoren		Rationale (
Voorgeschiedenis/		Toelichtfug diagnostiek
gezondheidsproblemen		Voorlichting en advies
	Dyslipidemie	Diagnostiek:
Aanbevelingen		 Lipidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal
Schildklierfunctie		cholesterol/HDL- cholesterol ratio)
Dyslipidemie		In ieder geval vanaf het 40e levensjaar
Secundaire colorectale tumoren		Pationala
Alopecia		
Gezonde leefstijl		Toelichting diagnostiek
Nieme		Voorlichting en advies
Lever	Secundaire colorectale	Diagnostiek
Uzerstapeling	tumoren	Eastes occult blooduarlies (IEOB-test)
Milt		ledere 3 laar, vanaf de leeftiid van 30 laar
Vermoeldheid	Let op	
		Rationale
Bijlagen		Toelichting diagnostiek
Richtlijnboekje		Voorlichting en advies
	Alopecia	Rationale
and the second se		

Focus: Ration via een pop-	ngern nale, toelichting diagnostiek en voorlichting en advies up tonen	
	,	
 I-131 therapie I-131 MIBG Allogene stamcelt Volledige thyreoid 	transplantatie dectomie	
I-131 therapie I-131 MIBG Allogene stamcelit Volledige thyreofe	transplantatie dectomie Satisfulge disposale Vereeficient of a statisfier of the statisfier on the statisfier of the statisfier of the statisfier on the statisfier of the statisfier on the statisfier of the statisfier on the statisfier of the statisfier on the statisfier of the sta	
I-131 therapie I-131 therapie I-131 therapie Allogene stancelt Volledige thyreoid	transplantatie dectornie Tatalabing disparatak Stephning disparatak Stephning disparatak Stephning disparatak Reserve nach bioshardne (FOS sert) Inter Signer disparatak Reserve and dis biofil sun 30 jun Reserve and disparatak Stephning disparatak	



	erheid van potentiële onderwerpen via een pop-up tonen
	Rationale
	Toelichting diagnostiek
Checken!	Toelichting diagnostiek
ren	Toelichting diagnostiek Veorlichting en adviss
	Rationale
	Toelichting diagnostiek
	Voorlichting en advies Rationale
	Voorlichting en advies

Algemene informatie	Aanbeveling	en
Primaire tumoren	Focus: Richtlijn	-boekje bij de bijlagen tonen
Primaire tumor 1 Diagnose gegevens	Schildklierfunctie	Diagnostiek:
Behandeling Chemo		 Laboratoriumonderzoek: TSH en FT4 Minimaal 1x per 2-3 jaar
Recidieven		Rationale Toolichting disconstick
Jecundaire tumoren		Voorlichting en advies
Voorgeschiedenis/ gezondheidsproblemen	Dyslipidemie	Diagnostiek: Upidenspectrum (totaal cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceriden, totaal cholesterol/HDL-cholesterol ratio)
Aanbevelingen Schildklierfunctie		In leder geval vanaf het 40e levensjaar Rationale
Dyslipidemie Sesundaire colorectale tumoren Alopecia		Toelichting diagnostiek Voorlichting en advies
Gezonde leefstijl Longon Nieren	Secundaire colorectale tumoren	Diagnostiek • Faeces occult bloedverlies (IFOB-test)
Lever Uzerstapeling Milt	Let op	leclere 3 jaar, vanaf de leeftijd van 30 jaar Rationale
Vermoeidheid		Toelichting diagnostiek Voorlichting en advies
Richtlijnboekje	Alopecia	Rationale Voorlichting on arbies
し Download IZP	Gezonde leefstijl	Rationale Voorlichting en advies

Algemene informatie	Bijlagen van de aanbevelingen
Primaire tumoren	Consensus-based richtlijn voor follow-up van de schildklierfunctie
Primaire tumor 1	Bij wie?
Diagnose gegevens	 Na radiotherapie op de schildklier, inclusief TBI (ongeacht dosis)
Behandeling	 Na behandeling met radioactief jodium (I-131 ablatie therapie)
Chemo	 Na therapeutische MIBG therapie (I-131 MIBG). MIBG gebruikt bij diagnostische
Desidiaren	onderzoeken (by MIRG scan) geeft geen verboogd risico op hypothyreoidie als adequate
Recidieven	vnorzorgymaatregelen genomen zijn
	Ne allogene stamoeltransplantatie
secundaire tumoren	 Na uniladige thurnidectomie. Schildkliertumoren worden nrimair door de endocrinoloog.
	habandaid an varveled. Na totale thereoidectomic bastaat direct post-operatief een risico
/oorgeschiedenis/	an minute en renogen her come en renoectemite destate en est post operation con race
ezondheidsproblemen	op primaire nypoparaunyreordie.
- the second second	Welke afwijkingen komen voor?
Aanbevelingen	Hypothyreoldie
Schildklierfunctie	 Na radiotherapie op de schildklier, inclusief TBI (ongeacht dosis)
Secundaire colorectale tumoren	 Na behandeling met radioactief jodium (I-131 ablatie therapie)
Alopecia	 Na MIBG therapie (I-131 MIBG)
Gezonde leefstijl	 Na allogene stamceltransplantatie
Longen	 Na volledige thyroïdectomie⁴
Nieren	Hyperthyreoïdie
Lever	 Na radiotherapie op de schildklier, inclusief TBI (ongeacht dosis)
Uzerstapeling	Na allogene stamceltransplantatie
Milt	
Vermoeldheid	Voorlichting en advies
	 Geef <u>voorlichting</u> over de verhoogde kans op een afwijkende schildklierfunctie en de
lijlagen	mogelijke symptomen die hierbij kunnen optreden
Richtlijnboekje	 <u>Bospreek</u> bij vrouwen met een verhoogd risico op hypothyreoïdie of bij reeds bekende
	hypothyreoidie net berang van net bepälen van TSH en FT4 voorafgaande aan en tijdens de twongerichen in werkend wet het visies en eenhonenele optwikkelingroenelemen.
December of 17D	zwangerschap in verband met net noto op embryonale ontwikkeingsprotiemen.
Download IZP	Welke diaznostiek en in welke frequentie zou moeten plaats vinden?
	 Bij een beroek aan de LATER - noli wordt als onderdeel van de uitrebreide enemese en

