Communication between General Practitioner and Vascular Surgery: a year after the introduction of the new type of discharge summary letter.

Michail Spyrantis, KU Leuven

Promotor: Prof. Dr. Bert Aertgeerts, KU Leuven

Co-promotor: Prof. Dr. Inge Fourneau, KU Leuven

Praktijkopleider: Dr Lieve Deturck

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Communication between General Practitioner and Vascular Surgery: a year after the introduction of the new type of discharge summary letter.

Abstract

Context Het gebruik van Elektronisch Medisch Dossier (EMD)-programma's wordt wijdverbreid in de dagelijkse praktijk van de huisartsen, met als doel gestructureerde registratie en uitwisseling van medische informatie. De registratie blijft echter suboptimaal vanwege verschillende registratiemethoden en codering van medische gegevens, waardoor efficiënte communicatie, gecodeerd gegevensgebruik voor klinische beslissingsondersteunende systemen (CDSS) en de uitvoering van klinische audits worden belemmerd. Bovendien spelen patiëntenbrieven een cruciale rol in de communicatie tussen ziekenhuis en huisarts en gebeuren ze nog steeds op een gebrekkige manier, waardoor een optimale gecodeerde registratie van medische gegevens wordt voorkomen. De Afdeling Vaatheelkunde van UZ Leuven stelde in 2018 een nieuw type patiëntenbrief voor ontslag voor, met een nieuwe samenvattende structuur, gecodeerde diagnose en co-morbiteiten in ICPC- en ICD-codering, evenals verder medisch advies voor follow-up. Na de eerste maand was de acceptatie door de verwijzende huisartsen zeer positief bij onderzoek met een kleine steekproef.

Onderzoeksvraag Het doel van dit onderzoek is om na te gaan wat de impact is van het nieuwe type ontslagbrief op de gecodeerde registratie van medische gegevens in de EMD van de huisartsen een jaar later.

Methodologie Van 1 februari 2018 tot 31 december 2018 hebben in totaal 359 verwijzende huisartsen de nieuwe patiëntenbrief van de Vaatheelkunde ontvangen. Na uitsluiting van alle huisartsen die niet per e-mail bereikbaar waren, werden de overige 187 huisartsen vrijwillig uitgenodigd om een online vragenlijst in te vullen over hun ervaringen met deze brief en de toestemming geven voor een korte screen-sharing sessie om na te gaan over hoe en waar registreerde ze de gecodeerde medische data in hun EMD. Vanwege de beperkte eerste respons en de samenvallende wereldwijde covid-19 pandemie, werden de huisartsen 7 weken later per e-mail herinnerd. Nogmaals, vanwege de beperkte respons, was de populatie van deelnemende huisartsen 5 weken later beperkt tot 46, door alleen huisartsen te selecteren die 3 of meer brieven ontvingen. Een nieuwe gepersonaliseerde e-mailronde waarin opnieuw deelname werd gevraagd en 2 weken later werd er een telefonische herinnering gedaan.

Resultaten In totaal vulden 15 huisartsen de online vragenlijst in met een totale respons van 8%. Slechts 6 huisartsen gaven aan de nieuwe patiëntenbrief te hebben opgemerkt, 5 van hen vulden de vragenlijst verder in. 3 van de 5 gaven aan dat ze de diagnose al gecodeerd hadden geregistreerd voordat ze de nieuwe patiëntenbrief ontvingen en vonden de nieuwe brief nuttig voor hun praktijk, evenals het advies van de vaatchirurg. Verder waren 3 van de 5 het niet eens met het uitbreiden van de brief naar andere disciplines. Ten slotte denken 4 van de 5 dat een CDSS-integratie in EMD nuttig zou zijn in de dagelijkse praktijk. 2 huisartsen gaven de toestemming voor een screen-sharing, maar dit was uiteindelijk niet gebeurd.

Conclusie De resultaten zijn beperkt om de aanvaarding en het succes van de nieuwe patiëntenbrief te evalueren. Elektronische uitnodiging voor deelname, het optreden van de wereldwijde Covid 19 pandemie en/of de drukke agenda van huisartsen met een steeds groeiende administratie, zouden enkele van de mogelijke redenen kunnen zijn. De nieuwheidsstructuur van de nieuwe patiëntenbrief kan echter verder op grotere schaal en mogelijks met een financieringssteun onderzocht worden.

Contact spyrantis.michael@gmail.com

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Preface

This research topic originated from a suggested topic by Professor Bert Aertgeerts for my master thesis during the two-year period of my residency as general practitioner. The central idea was to explore further the positive results presented in a previous master thesis done by Dr. Peter Daelman, that took a first a step to improve the communication between the Vascular Surgery Unit of UZ Leuven and the referring general practitioners (GPs) of the Leuven Region. Based on the positive response of the GPs on the new type of discharge summary letter developed by the Vascular Unit (Annex 1), our aim was to explore further the acceptance of this letter in everyday practice.

Initially the proposal was formed to investigate further the acceptance of the new discharge summary letter of the Vascular Surgery Unit among a wider population of GPs, as well as to broaden the usage and implement the new letter in another surgical unit, with that being the Abdominal Surgery Unit of UZ Leuven, that was starting with a novel care project for inguinal hernia restoration. However, because of the short span of time of completion of this master thesis, the latter was not possible.

In addition to the previous obstacle, due to the fact that the research proposal had to be approved by the Ethical Committee of the University, the committee was asking for further clarifications and to take care of some formalities around the request itself. At that point, together with Professor Bert Aertgeerts and with the guidance of Professor Inge Fourneau, head of Vascular Surgery Unit, we decide to reform our initial proposal and come up with a novel and challenging proposal to assess the possible success of the new discharge summary. After asking the Ethical Committee to reset our proposal and having been granted the permission to do so, the attempt to include the Abdominal Surgery Unit in our research was abandoned. Instead, we decided to include all the referring GPs that received the new discharge summary letter from the Vascular Surgery Unit in 2018 and investigate their acceptance, opinions about the new summary and the included recommendations of the vascular surgeon. Further, and the most challenging part, would be to get the permission of these GPs' to screen share with the help of Teamviewer™ program, their method of medical data registration in their own Electronic Health Records (EHR) programs. The aim of the latter being to investigate the objective advantage of the new discharge summary, that included coded diagnosis and co-morbidities, in the daily general practice, as well as to investigate if the GPs take advantage of the coded medical data and register it properly.

After a long period of months that followed and by exploring multiple methods, we were finally able to present a methodology proposal that would be fully protective of the medical confidentiality and the privacy rights of the GPs and patients, and in the end get the Ethical Committee approval. An approval that finally came on February 4th, 2020.

Because of the inclusion of a large population of GPs (>180) the cost of sending and receiving the questionnaires by post was estimated to be prohibitive, considering that there was no funding. Thus, an alternative way of sending out the questionnaire with the help of an online questionnaire platform (SurveyMonkey™) was considered a viable and effective method, reducing the costs, and giving immediate feedback of the results. Therefore, the first round of the research began on March 5th, 2020, with the first replies following soon after.

However, as widely known, Belgium was hit by the COVID-19 pandemic in mid-March, with the result of putting the country's health care system under pressure and GPs playing a crucial role in the prevention of spreading of the virus and in the screening of suspected cases. At that point, the momentum of receiving back questionnaires came to a stillstand. An attempt for a reminder took place at the end of April when the pandemic's magnitude started to decline but delivering once more poor results. Completion of master thesis was postponed to the following possible moment in August. In the beginning of June, under the guidance of Professor Aertgeerts, it was decided to drastically limit the population of the GPs by sending personalized e-mails to GPs that received 3 or more discharge summaries during the year 2018. After receiving a mere two answers, a reminder by telephone followed two weeks later. Unfortunately, even that did not result in an increased answer rate.

Finally, under the current circumstances, on July 3rd, 2020 after the proposal of Professor Aertgeerts we agreed to stop further efforts and finalize the current research project with the limited results that we had until that moment, in order to be able to complete the master thesis in time for the submission deadline. During the following sections of the master thesis you will be able to explore the literature around the topic of communication between hospital and GPs, our proposed methodology and, finally, the limited results together with the discussion and conclusion. In brief, the results are too limited to extract safe conclusions for the future of the new discharge summary letter and its acceptance. Furthermore, it remains unclear as to whether these poor results can be attributed to the magnitude of the COVID-19 pandemic and the subsequent increased workload of GPs or due to limited interest in this particular subject or plain lack of time in the busy agendas of GPs.

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I. Introduction

The employment of Electronic Health Records (EHR) programs, as a method for registration of a patient's medical information, is nowadays becoming widespread in the general practitioners' practices of developed countries.[1] The primary use of an EHR program is the registration of medical information, but it also aims at providing a structured exchange of information between general practitioners working in the same environment and between general practitioners and doctors of other specialties as well.

However, at this point the registration of data in the EHR is far from optimal. Incomplete data, suboptimal registration, different coding of medical data, suboptimal communication between doctors, limited worktime, are some elements that constitute obstacles for the right registration.[2–5] Thus, the usage of a modern EHR program remains far from optimal and as a result the communication between doctors and the final aim of follow-up and therapy of the patient remains limited as well.

Medical data registration can be done via a variation of methods. By far the easiest method would be the free format registration of medical information, but simultaneously also the most inefficient, for it provides little to no existent structure and furthermore little to no possibility for further processing of data. Taking that into account, a possibility for further optimization would be the employment of medical data coding. The examples of the International Classification of Primary Care (ICPC) and the International Classification of Diseases (ICD) are two of the biggest steps in structured registration of medical data, considering diagnosis, but also registration of co-morbidities, intolerances, allergies, and antecedents; a registration method of medical data that could be widely recognizable and could be used for communication between doctors of different specialties and other health providers. [6–9]

Furthermore, the employment of the aforementioned coding systems could function as a trigger for the implementation of clinical decision support systems (CDSS) and the execution of clinical audits. With the use of the CDSS the aim is to link a specific code to a decision tree linked to the latest evidence-based medicine and afterwards provide the general practitioner with optimal therapy scheme suggestions or follow-up workflows adjusted to the patient's characteristics;[10–12] a useful tool that begins to spread and becomes even more popular via its integration in the EHR programs. On the other hand, a structured coding is considered to be a baseline for the execution of clinical audits with all the advantages that they could offer in research and finally in the improvement of the provided health service. [13,14]

However, to take advantage of the CDSS and implement clinical audits to finally improve the medical service provided or go a step further for a "personalized medicine"[15], structured

medical data is a necessity. To optimize that to a greater extent, an optimal flow of medical information from the hospital to the general practitioner is crucial.

Nonetheless, adjacent to an already problematic medical registration, the transition of medical information from the hospital to the general practice is still happening in a deficient manner. If we set aside the old-fashioned way of communication through handwritten hospital discharge reports that tend to be abandoned and are being replaced by digital means, there are still a few shortcomings for optimal transition. Discharge summaries not arriving on time, not containing the necessary follow-up information or missing the diagnosis, are some of the shortcomings that seem to arise when literature is examined.[16–18]

An option to make the discharge summaries more practical would be to directly include the diagnostic coding in the discharge summary sent from the hospital to the GP. Such approaches were already researched by Kliakovic et al, 2004[19] and Murphy et al. 2017[20] with positive acceptance for implementation. Additionally, in Belgium, the first step for such an optimization was set by a research project with the collaboration of general practitioners and the Vascular Surgery Unit of UZ Leuven in 2018.[21] The Belgian standard of discharge summary communication is done by a form of pdf file letter that is digitally sent to general practitioners and afterwards integrated in the EHR program. For years the structure remained unchanged including the following: patient's information, medical history, reason for contact or hospitalization, anamnesis, risk factors, laboratory tests and medical imaging, followed by the last section where the health problem was discussed, diagnosis presented, follow-up and the new medication scheme suggested. The new approach suggested by the research project was to have an already ICD10/ICPC2 coded diagnosis, as well as coded co-morbidities followed by cardiovascular prevention suggestions and proposed chronic medication, included in the beginning of the discharge summary letter (Annex 1).

Despite it not being a nation-wide project, enumerating at the end 30 participants, by means of questionnaires, this new approach for discharge summary letter seems to have received a positive acceptance at the level of the GPs. Two thirds of the questioned GPs considered the new type of discharge summary of the Vascular Surgery Unit as an added value in communication between GPs and hospital, with half of them additionally considering it as an added value in their everyday practice. More than two thirds reported that they registered the coded diagnosis, as well as the suggested medication scheme in their EHR program.

The scope of this study is to examine the impact of the new type of the discharge summary letter of the Vascular Unit on the coded registration of the diagnostic data in the EHR programs of the GPs one year later.

II. Methodology

1. Setting and participants

The department of the Vascular Surgery Unit of the University Hospital of Leuven (UZ Leuven) as well as GPs that received the new type of electronic discharge summary were selected to participate in this study. The Vascular Surgery Unit had already integrated the new electronic discharge letter in their everyday outpatient clinic routine since February 1st, 2018. Table 1 summarizes the data of the Vascular Surgery Unit.

Table 1. Summary of Vascular Surgery Unit characteristics

General statistics of the Vascular Surgery Unit of UZ Leuven for year 2018	
Personnel	4 attending physicians specialized in arterial pathology 2 attending physicians specialized in venous pathology 2-3 senior residents 3 junior residents
Consultations (gross estimate)	3100 patients with arterial pathology (68% males, 45% under 70y, 38% 70-80y, 17% above 80y) 2000 patients with venous pathology 1300 patients with lymphoedema pathology
Hospitalizations (gross estimate)	850 patients (mostly arterial pathology)
Population served	Estimation not possible (mostly broad Leuven region)

Statistics provided by the Vascular Surgery Unit of UZ Leuven.

2. Intervention

A list extraction was performed from the EHR program used by the vascular surgery unit (KWS-program), providing all the GPs that were designated as recipients of the new type of discharge summary during the period between February 1st, 2018 and December 31st, 2018. A total amount of 359 GPs was extracted. One of the GPs was further excluded because of working in the same practice as one of the researchers and additionally another one because of being a researcher himself, to prevent bias during further research.

Out of the 357 GPS, 170 were further excluded because of not having provided an email address to the vascular surgery unit. To the remaining 187 GPs an email was sent through the online survey tool Surveymonkey™, including the link to the questionnaire accompanied by an informed consent. Participation was set on a voluntary basis. After an initial period of 7 weeks, the GPs that did not give an answer were reminded by means of an email to participate in this study if they were still willing to do so. Due to a very limited response 5 weeks later, the decision was taken to further limit the population the GPs, by selecting the ones that received 3 or more discharge letters. This action limited the population to 46 GPs. A new personalized e-mail including the link to the Surveymonkey™ questionnaire was sent. After two weeks a round of contact by telephone took place to kindly remind the GPs to participate by filling in the questionnaire.

Further intention was to collect all answered questionnaires, and to create a list with all the GPs that responded positively to the suggestion of being contacted by telephone for a screen-sharing session using the Teamviewer™ program. A random selection of GPs would be made, and the vascular surgery unit would provide a new list with two example patients for whom these GPs received the new type of discharge summary. The information provided about the patients would be name, surname and birth date, the minimum necessary information for medical file recognition.

Afterwards these GPs would be contacted by telephone and asked to initiate a screen-sharing session with the use of the Teamviewer™ program. During this session the GPs would be asked to show their way of registering the coded information in their EHR program, as well as to showcase their already registered information with the medical files of the two example patients provided by the vascular surgery unit. GPs would be assessed separately for the registration of the coded diagnosis, of the coded co-morbidities, and the registration the proposed medication scheme (Annex 3). Attention would be given to whether the coded diagnosis and co-morbidities were registered in the respective antecedents and care elements sections of the EHR program, as well as the registration of the medication scheme in the chronic medication section, respectively. Only the work process of the GPs, as well as the right or wrong manner of coded medical data registration would be assessed during this session. No medical information concerning the example patients would be recorded at any time of this process or used further in analysis and after the end of the screen-sharing session any information regarding patients would be deleted.

The primary outcome to be extracted from the questionnaire and the screen sharing would be:

- Impact of implementation of the new discharge summary a year after its introduction, measured in percentage of acceptance and usage in the general practice.

Further secondary outcomes interesting to investigate:

- Percentage of registered coded information from the questionnaires corresponding to percentage of the correctly coded information retrieved from the Teamviewer™ screen-sharing session.

- Percentage of positive acceptance.

- Percentage of GPs that consider the new discharge summary a contribution to a better practice.

- Percentage of the GPs that consider the included suggested cardiovascular prevention advice from the surgeon as necessary.

- Percentage of GPs that consider the CDSS tools as an advantage in their daily practice.

The data from all the questionnaires was collected digitally within the online survey tool Surveymonkey™. Afterwards with the aid of descriptive statistics analysis the data was presented with charts. This study was a descriptive study. Furthermore, it was not blinded.

3. Ethical approval

Ethical approval for this study was given by the Ethics Committee of the KU Leuven University (Onderwijs-BegeleidingsComissie voor ethische goedkeuring van masterproeven van de Groep Biomedische Wetenschappen) on February 4th, 2020. (Annex 4,5)

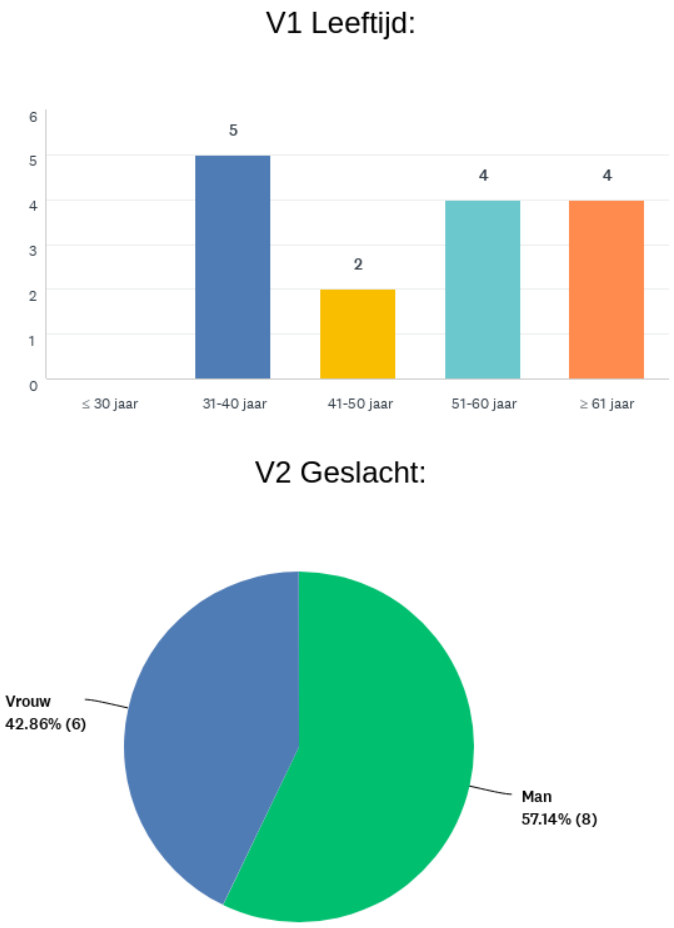
III. Results

1. Demographics

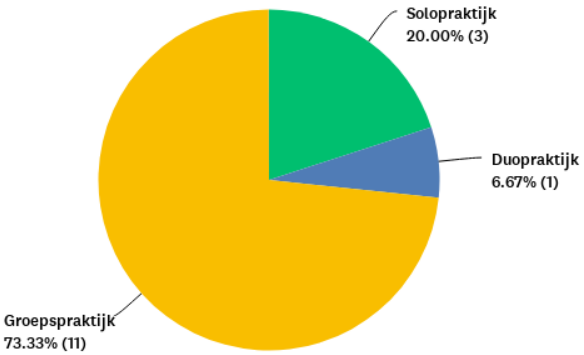
By beginning of July 2020, the Surveymonkey™ tool registered 15 reactions to the online questionnaire. The whole intervention process and responses can be seen on Figure 1. One GP contacted the researcher personally to state that he never noticed the new discharge letter and did not want to participate further or receive reminder emails. As result only 15 responses were further included for analysis and results presentation (Figure 2). The total response rate was 8%.

8 of the responding GPs were male and 6 were female. One GP preferred not to state their gender. 8 participants were older than 50 years old, with every age category being represented except for the category of younger than 30 years old. The majority (12 out of 15) of the GPs worked in a group practice with one or more colleagues. EHR programs of CareConnect and HealthOne seems to be more popular than Daktari, showing 7, 6 and 2 users, respectively. (Figure 1)

Figure 1.



V3 Praktijkvorm:



V4 Welk elektronisch medisch dossier gebruikt u?

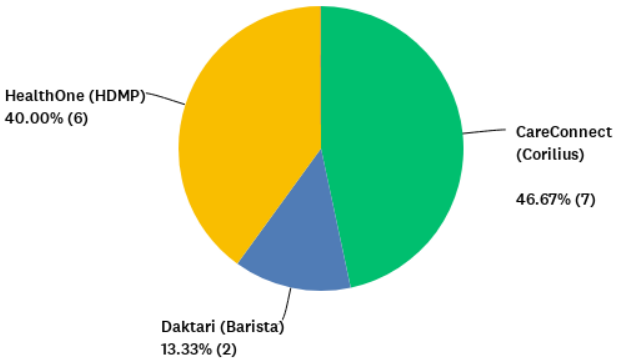
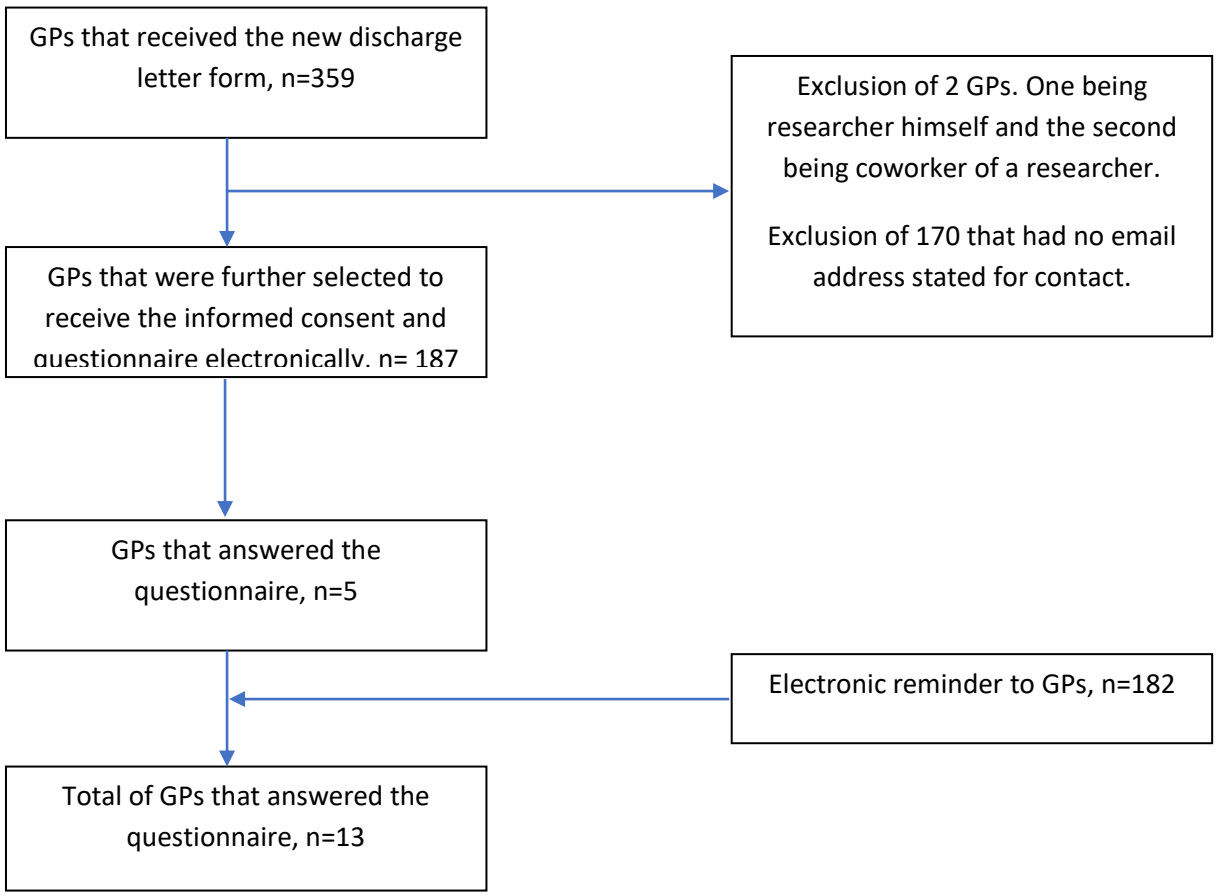
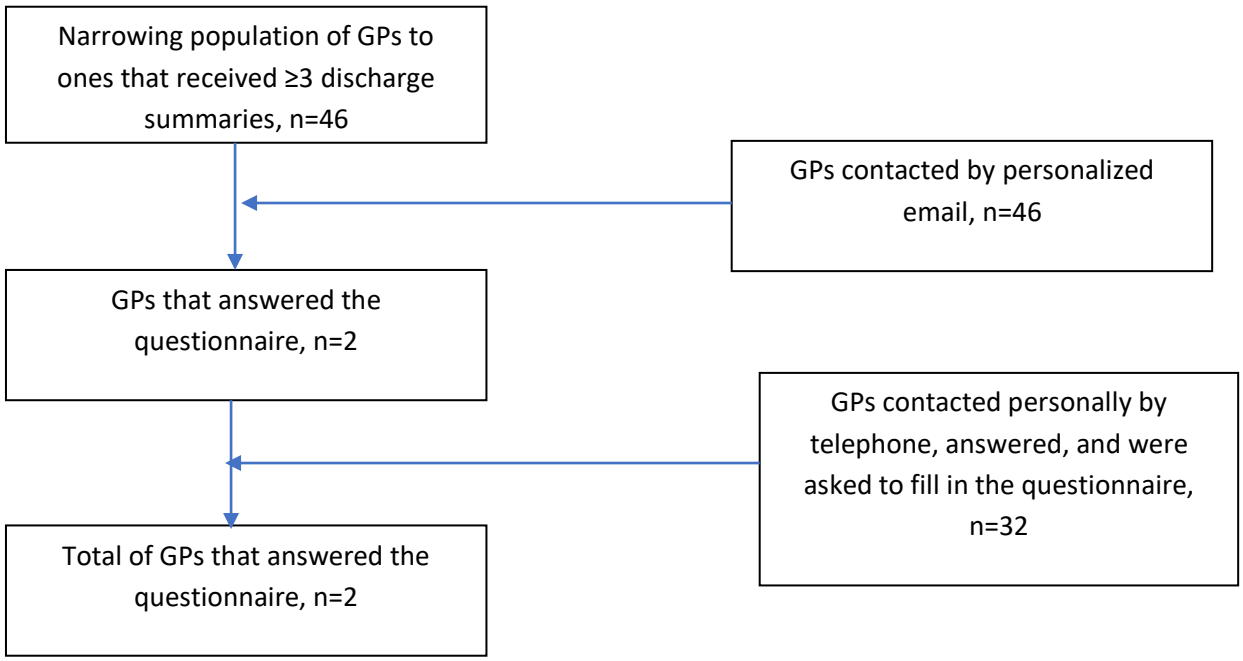
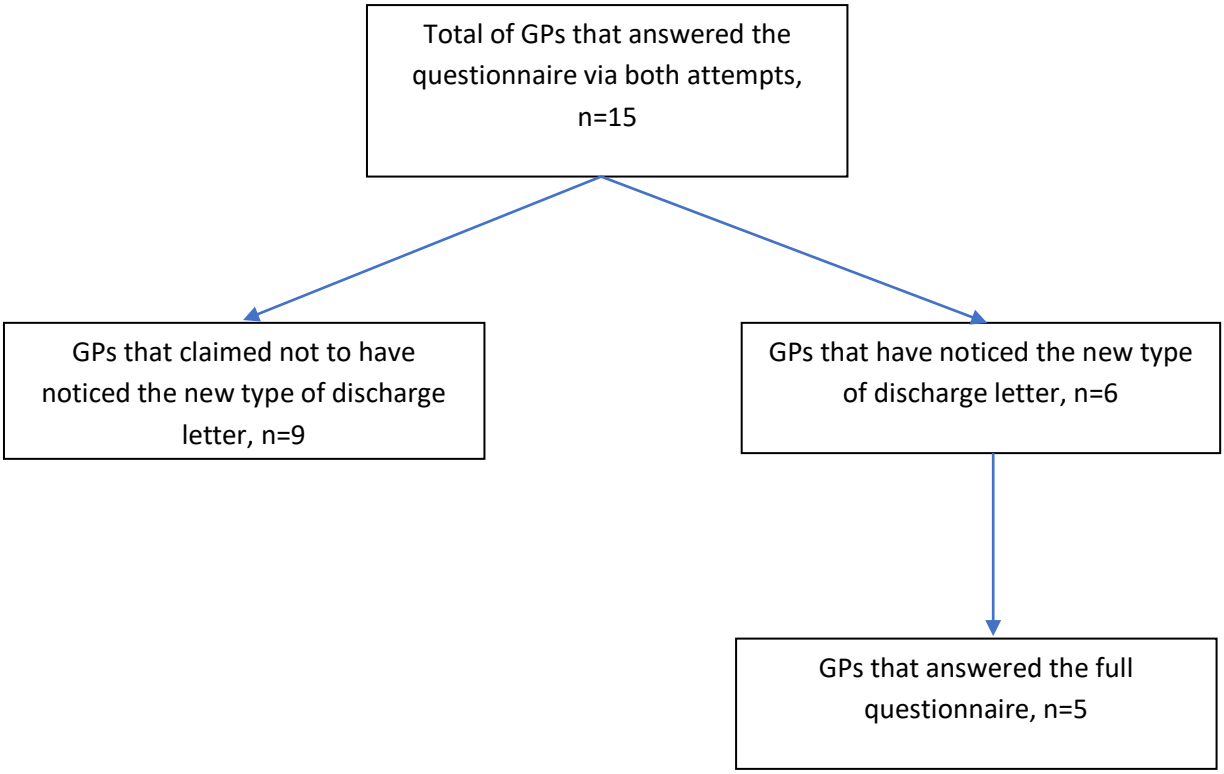


Figure 2.



Change of methodology due to pure response rate

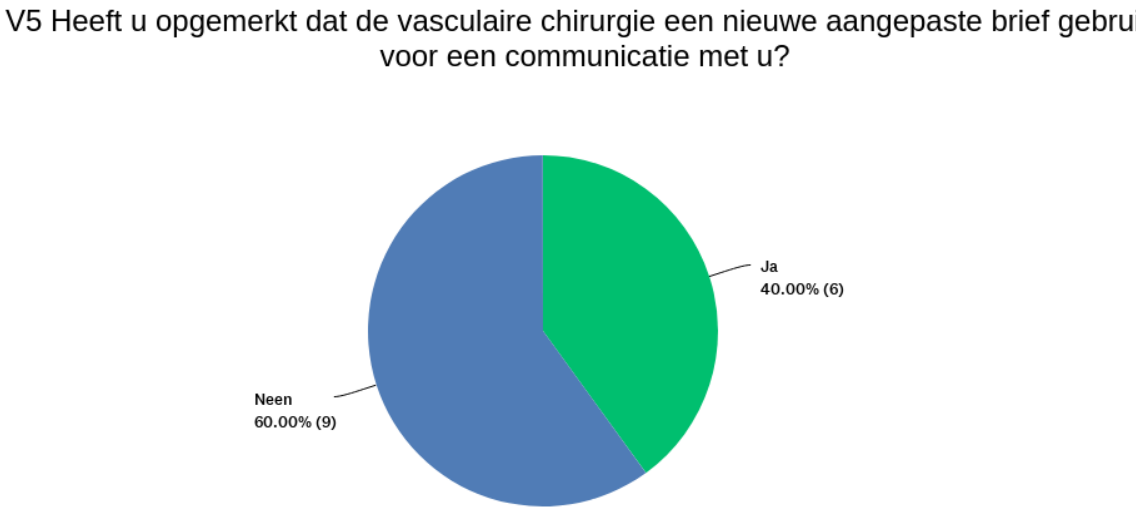



Total of GPs that answered the questionnaire via both attempts, n=15
GPs that claimed not to have noticed the new type of discharge letter, n=9
GPs that have noticed the new type of discharge letter, n=6
GPs that answered the full questionnaire, n=5

2. Questionnaire results

Out of the 15 received responses, 9 GPs stated that they have not noticed the existence of the new discharge summary sent by the Vascular Surgery Unit, thus terminating the questionnaire. Out of the 6 GPs that replied positive, only 5 completed further the questionnaire. (Figure 3)

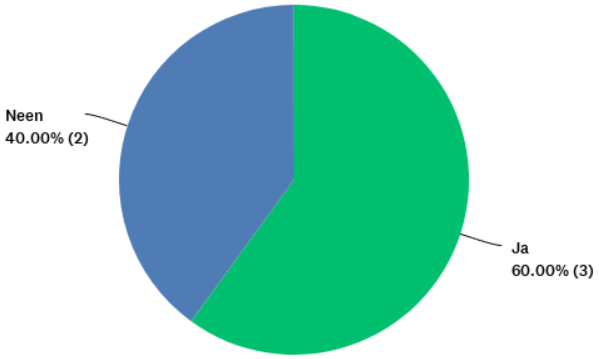
Figure 3.



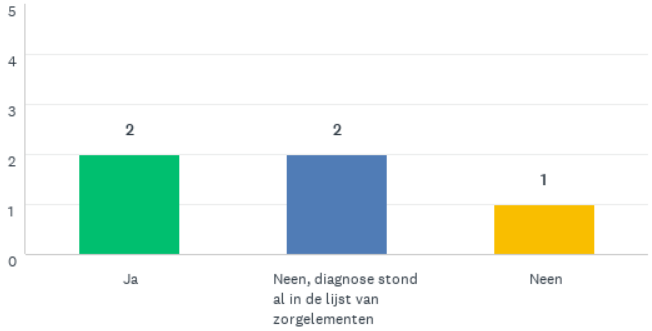
3 GPs stated that they already registered previous diagnosis with a coded manner before receiving the new discharge summary. Further, 2 GPs registered the proposed ICPC coded diagnosis, 2 GPs did not because it was already registered, and one GP did not proceed further with coded registration. All 5 GPs adjusted and registered the recommended chronic medication according to the proposal in the summary. Before receiving the new discharge summary, 3 out 5 GPs did not register if the patient was smoker or ex-smoker, two of them never differentiated between smoker/ex-smoker/nonsmoker, and none of them registered the pack years in general. After receiving the new discharge summary, 2 out 5 GPs stated that they indeed started registering the smoking habits. (Figure 4)

Figure 4.

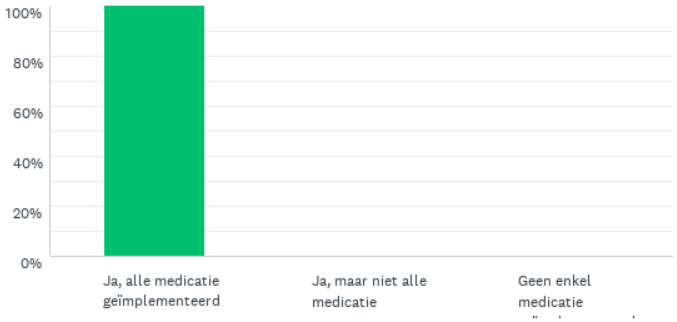
V6 Registreerde u, voordat u deze brief ontving, de diagnose bij de lijst van zorgelementen op een gecodeerde manier?



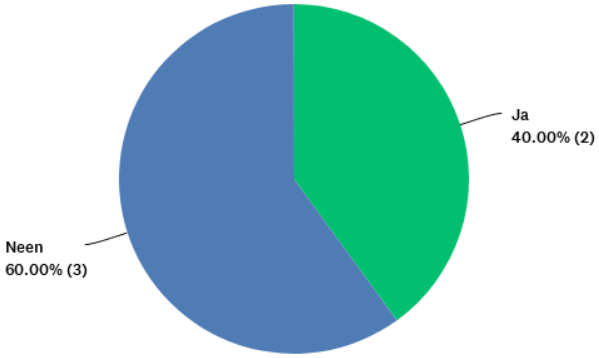
V7 Heeft u naar aanleiding van de nieuwe brief de diagnose met bijhorende ICPC-codering genoteerd in uw dossier als zorgelement?



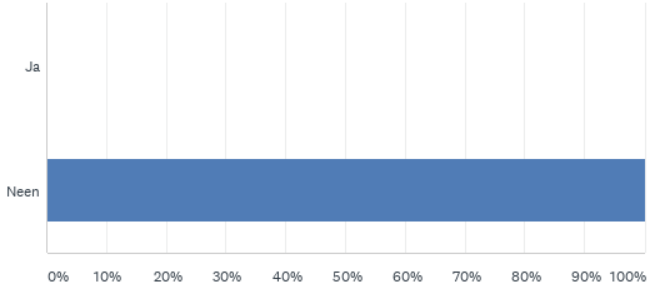
V8 Heeft u de (nieuwe) medicatie geïmplementeerd in de lijst van de chronische medicatie?



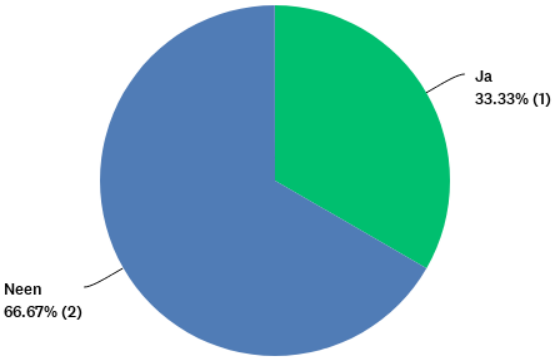
V10 Noteerde u, voordat u deze brief ontving, of de patiënt rookt of niet?



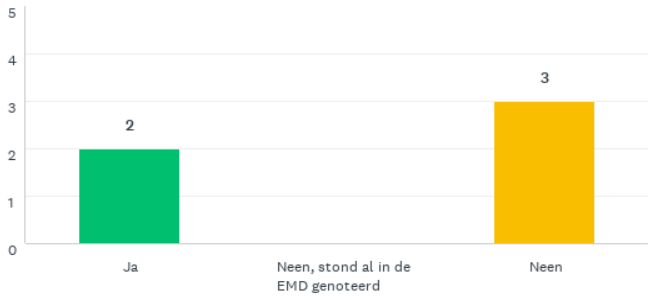
V11 Zo ja, registreerde u ook het aantal pakjaren?



V12 Zo ja, maakte u onderscheid tussen ex-roker, actieve roker en persoon die nooit heeft gerookt?



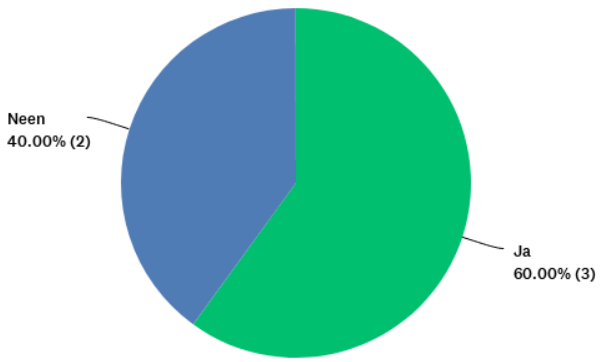
V13 Heeft u naar aanleiding van deze brief genoteerd of de patiënt rookt of niet?



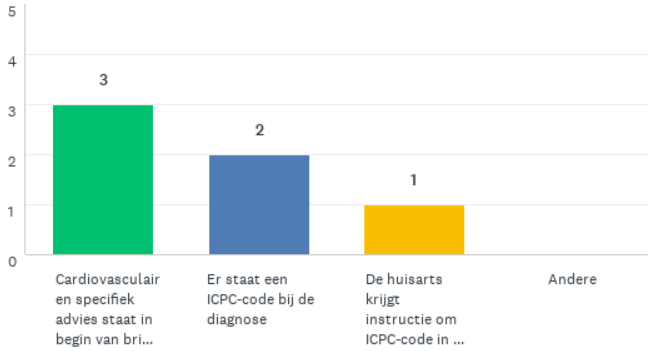
3 out 5 GPs found the new type of discharge summary as an added value, with all of them agreeing that the biggest added value is due to placing the specific cardiovascular advice and follow up in the beginning of the letter, instead of at the end as was the case before. Further, the inclusion ICPC coding of the diagnosis as well as the prompting to register the coded diagnosis were considered an added value but to a smaller degree. 4 out of 5 GPs found the specific advice of the vascular surgeon in connection with the follow-up as an added value, while 1 GP stated that he was neutral. (Figure 5)

Figure 5.

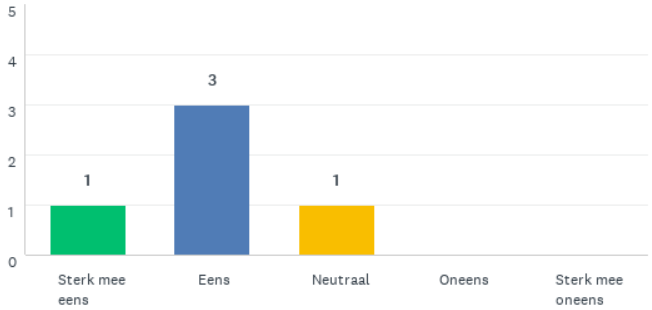
V14 Vindt u de aangepaste brief een meerwaarde?



V15 Zo ja, welke elementen in de brief vindt u positief? (meerdere antwoorden mogelijk)



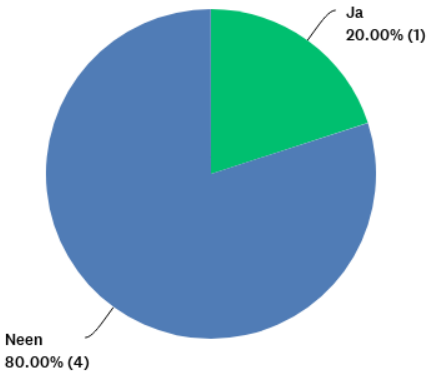
V17 Wat vindt u van de onderstaande stelling:“Het advies van de vasculaire chirurg in verband met de cardiovasculaire preventie, dat in de nieuwe brief inbegrepen is, is een meerwaarde?



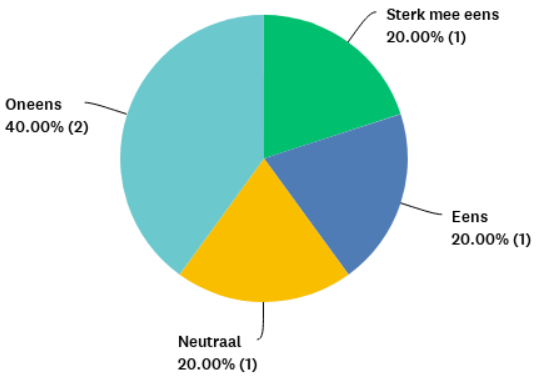
Most of the GPs did not suggest any improvements to the discharge summary, while one GP commented that the formulation of the new type of summary letter is “too obligatory and reproachful”, while his/her EHR program, in this particular case Daktari, does not allow for registration with ICPC coding and it uses its own coding manner. 2 GPs stated that the summary letter did not improve the daily medical practice, one was neutral and 2 were positive. Further, 3 out of 5 did not agree with extending these new discharge summaries to other medical units and departments. The question over the added value of the CDSS implementation in the EHR program of the GPs, did not show a clear answer, with answers ranging from full agreement to disagreement. (Figure 6)

Figure 6

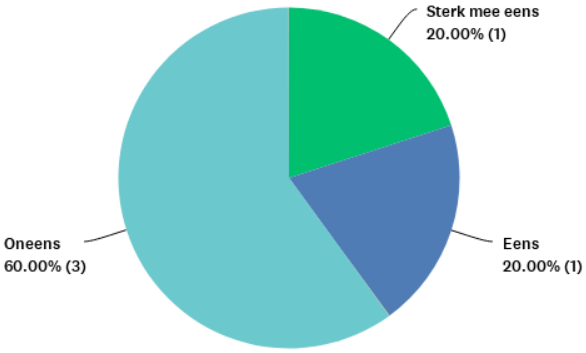
V18 Heeft u suggesties om brief nog aantrekkelijker te maken?



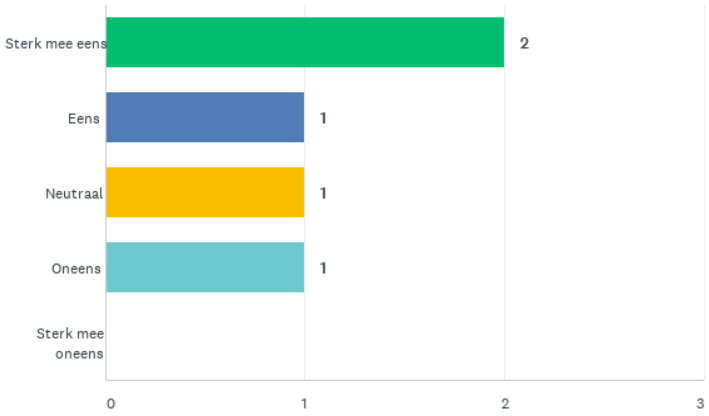
V20 Helpt deze brief u in een betere dagdagelijkse praktijkvoering?



V21 Vindt u de lay-out van deze brief een voorbeeld voor andere diensten?



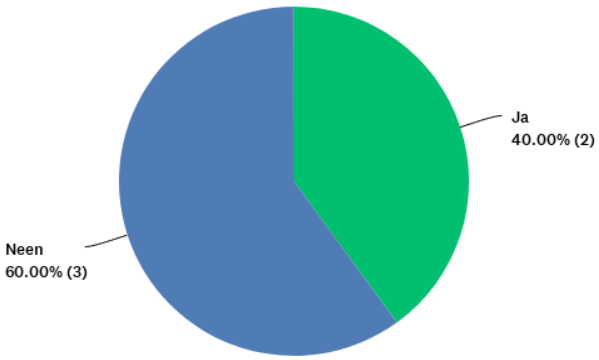
V22 Is een klinisch beslissingsondersteunend systeem een meerwaarde in het EMD van de huisarts?



Finally, only one GP answered positively to being contacted for the screen sharing session with Teamviewer™, stating his contact information and preferred time frame. Another one answered also positively but did not provide any further contact information. As a result, this section of the proposed methodology was not pursued further. (Figure 7)

Figure 7.

V23 Heeft u uw toestemming om telefonisch gecontacteerd te worden voor een eventueel overleg en screen-sharing sessie met Teamviewer™ programma om samen te overlopen uw proces van gecodeerde diagnose registratie in de EMD-pakket met gebruik van tweetal patiëntendossiers voorbeelden? (geschatte tijd 5-10min)



IV. Discussion

With a final participation rate of only 8% and with only 6 GPs out of 15 having noticed the presence of the new discharge summary letter from the Vascular Surgery Unit of UZ Leuven, extracting any conclusions would be neither safe nor responsible. For this reason, it was decided not to go further with the discussion of the results themselves, rather with factors that could have possibly led to this poor result.

First of all, the decision was taken to reach out to the participating GPs electronically, with the help of the online survey tool of Surveymonkey™, in order to minimize costs of research and to be able to reach to as many population subjects possible. Considering that a huge amount of communication today happens via email, another email inviting GPs to participate in an online survey could have been easily lost in the inbox or just been ignored because of the lack of time for non-acute matters of interest. In comparison, a personally addressed paper document sent by regular mail might have yielded better results, as it did with the previous research master thesis of colleague Dr Daelman. [21]

Secondly and most importantly, we simply cannot overlook the fact that the intervention part of this project coincided with the COVID-19 pandemic. In Belgium specifically this pandemic put a huge strain on the health care system, with burdening the already busy agenda of GPs by putting them in the front line of screening and spreading prevention. GPs, including us researchers (as we are full time GPs too), were bombarded daily with hundreds of emails on information, procedures and every day changing guidelines around the pandemic and its spread prevention, of course among other work-related emails. As such, an email or telephone call asking to participate voluntarily in an online survey, could have been dismissed easily or just postponed to a later time.

Thirdly and finally, we should not underestimate the busy agenda of GPs, also outside the pandemic. As already known, except for the medical part of the job itself, the administrative burden is ever increasing and more time consuming than before. This can lead to ignoring all the non-essential email communications, but as well as ignoring the existence of the new type of discharge letter itself when the GP is presented with hundreds of patients' discharge summary letters daily. This latter factor could be possibly improved by a wide communication strategy through newsletters or seminars, stating the existence of the new discharge letter as well as its added value in the daily practice. This could attract more focused attention to such hospital initiatives.

The inability of this research project to evaluate the acceptance and success of the new discharge summary for the GPs, should not in any way underestimate the value and novelty that it brings to the medical world. An extensive literature search can yield thousands of studies that focus on the communication between hospitals and GPs for faster, more efficient, and more accurate discharge summaries.[22] Next to the precision of the diagnosis and its coding,[23] a lot of studies focus on the content itself, in other words whether the letters are containing all the necessary information for the GPs to follow-up their patients.[24]

However, no one, to our current knowledge, researched the structure of the discharge summary itself and further investigated whether it can contribute to a more efficient communication and better coded medical data registration that can be further used for audits, researches and support the CDSS programs. One exception being the study by Bansard et al. 2017 that proposed to split the communication between hospital and GPs with an immediate discharge letter and a later discharge summary. The letter being composed the day of discharge from the hospital, containing critical information and coded diagnosis, and the summary being composed in a second phase and sent later to the GP, containing all the information from the hospitalization.[25]

Our suggestion would be not to be discouraged by the limited results of this study and investigate further the possibilities of the new discharge summary implemented by the Vascular Surgery Unit of UZ Leuven on a larger scale. Possibly in the context of a doctoral thesis where a bigger time span of research and funding can play a crucial role for successfully obtaining results and extracting conclusions.

V. Conclusion

The results of this study are too limited to extract any further conclusions about the acceptance and success of the new discharge summary implemented by the Vascular Surgery Unit of UZ Leuven. Possible reasons for the limited results could be the impersonal addressing of an email invitation to participate in a study, the occurrence of the COVID-19 pandemic that put a lot of stress on the agenda of the general practitioners or simply because an already busy agenda with ever growing administration burden does not allow time for participation in studies that are based on voluntary participation. However, the novelty structure of the new discharge summary should be investigated further on greater scale and possibly with a funding aid.

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VII. Annexes

Annex 1: Voorbeeld aangepaste patiëntenbrief vaatheelkunde

Wij zagen uw patiënt, (voornaam) (naam), op de raadpleging vaatheelkunde op 31-01-2018.

Specifiek advies

Vandaag zagen wij uw patiënt voor wondcontrole;

Zij stelt het goed. Er zijn stabiele bevindingen. Op dit moment zijn er geen therapeutische implicaties van toepassing.

Cardiovasculair advies

>> Graag willen wij u vriendelijk verzoeken om de vermelde ICPC-codering in te voeren in uw elektronisch patiëntendossier, alsook het rookgedrag en de medicatie-inname m.b.t. anti-aggregantia en statines in het patiëntendossier te vermelden. <<

Roken: ICPC P17

Rookstop is een must. Dit moet verder aangemoedigd worden, al dan niet ondersteunend met farmacotherapie.

Medicatiebeleid:

Lage dosis anti-aggregantia is aangewezen. Dit behoort reeds tot de thuismedicatie.

Een statine is aangewezen. Dit behoort reeds tot de thuismedicatie.

Hypertensie: ICPC K85

- aanwezig - behandeld met 2 types medicatie

Een bloeddruk van < 140/90 mmHg moet nagestreefd worden. Hiervoor vertrouwen wij de patiënt toe aan uw zorgen.

Gewicht:

BMI = 19.19 kg/m². Het BMI valt binnen de wenselijke range van 18.5 - 24.9 kg/m².

Fysieke activiteit:

Fysieke activiteit gedurende 30 minuten per dag wordt best aangemoedigd.

Hyperlipidemie: ICPC 93

- aanwezig - medicatie

Een LDL < 100 mg/dl wordt best nagestreefd. Hiervoor vertrouwen wij de patiënt toe aan uw zorgen.

Diabetes Mellitus:

- niet aanwezig

Carotislijden:

Een jaarlijkse controle duplex is aangewezen.

Diameter aorta abdominalis:

Verdere controle is niet nodig.

Cardiale voorgeschiedenis:

- stabiele angor

- asymptomatische aritmie

Perifeer vaatlijden:

Links: Patiënt functioneert in Rutherford 0 (klachtenvrij)

Rechts: Patiënt functioneert in Rutherford 0 (klachtenvrij)

Medicatievoorstel

- Alprazolam eg, 0.5 mg (dagdosis), 1/d, 22u

- Amlodipine eg, 10 mg, 1/d, 8u

- Arava, 20 mg (dagdosis), 1/d, 8u

- Clopidogrel zentiva, 75 mg, 1/d, 8u

- Cordarone, 200 mg, 2/d, 8u 20u

- Durogesic (pleister 100 mcg/h), 1 pleister, TRANSDERM, 1 keer om de 3 dagen, 8u

- Durogesic (pleister 25 mcg/h), 1 pleister, TRANSDERM, 1 keer om de 3 dagen, 8u

- Emconcor, 5 mg (dagdosis), 8u

- Ferograd 500, 525 mg, 1/d, 8u

- Foliumzuur, 1 mg (dagdosis), 8u

- Medrol, 2 mg (dagdosis), 8u

- Oxynorm, 10 mg

>\# bij pijn (max 3)

- Pantomed, 40 mg, 8u

- Totalip pfizer (comp 20 mg), 1 stuks, 1/d, 20u

Verdere opvolging

Verdere opvolging van de patiënt werd voorzien op AFSPRAAK

Op woensdag 14-02-2018 om 15:00 uur in het afsprakenboek vaatheelkunde Dr. Houthoofd (VAT)

Op woensdag 28-03-2018 om 14:00 uur in het afsprakenboek FM echo-cardio (CAR)

Op woensdag 28-03-2018 om 15:00 uur in het afsprakenboek cardio prive prof.dr. C. Dubois (CAR)

Intussen vertrouwen wij de patiënt graag verder toe aan uw zorgen maar wij zijn natuurlijk steeds bereid om de patiënt eerder te zien op uw indicatie.

Verderzetten van de cardiovasculaire preventiemaatregelen blijft uiteraard een must.

Bovenstaand beleid m.b.t. uw patiënt werd gebaseerd op volgende informatie:

Vasculaire voorgeschiedenis:

- 03-2015 PTA a. poplitea rechts en a. femoralis superficialis links

- 22-01-2018 atypische amputatie D2 rechts, na verwikkelde PCI via a. radialis rechts

Niet-vasculaire voorgeschiedenis:

- AHT

- cardiaal lijden (multivalvulair kleplijden (Matig AS, AI 3/4, TI 2-3/4)

- intermittent VKF

- 2003: erosieve RA

- 09-2011: maagulcera met maagbloeding

- 12-2011: pneumococcen pneumonie

- 05-2013: VKF met matig snel ventriculair antwoord waarvoor Cordarone en xarelto

- 05-2013: normocytaire anemie

- 2013: chronische nierinsufficiëntie

- 11-2013: investigatie dyspnee (licht restrictief longlijden met sterke diffusiedaling) BAL aspiraat bevat voornamelijk beladen macrofagen,vermoedelijk ikv blijvend actief nicotinegebruik. dd emfyseem dd arava-geinduceerd longlijden dd UIP

- 01-2014: Symptomatische spinaalkanaalstenose thv L4-L5 bilateraal en thv L3-L4 rechts -> bilaterale mediale facetectomie thv L4-L5 en thv L3-L4 rechts.

- 03-2014: UIP ikv Reumatoïde artritis

- Carpal tunnel rechts

- 2011: TKP links

- 01/2014: Mediale facetectomie lumbaal, bilateraal

- 06/09/2017: PCI met DES LAD, initiële poging via a. radialis rechts, echter niet succesvol waarna femorale punctie.

Relevante factoren:

19-01-2014: Allergie - Geen gekende allergieën

Huidige problematiek:

Patiënt komt vandaag voor wondcontrole. . Patiënt vermeldt dat de wonde niet meer pijnlijk is. Zij neemt hiervoor antibiotica.

Patiënte neemt nog Tavanic op basis van de culturen die Staph aureus tonen.

De verpleegkundigen komen 1x/ dag met Jelonet en droog aseptisch verband.

Patiënte dient nog een rugoperatie te ondergaan bij Dr. Moke (orthopedie). Zij ervaart uitstralende pijn in het linker been wat stappen zeer moeilijk maakt.

Geen koorts gehad.

Klinisch onderzoek:

Bloeddruk: Linkerarm: Niet gemeten

Rechterarm: Niet gemeten

Polsslag: x/minuut

Halsvaten: Links: -

Rechts: -

Aorta: -

Liespulsaties: Links: -

Rechts: -

A. Poplitea pulsaties: Links:

Rechts:

A. Dorsalis Pedis pulsaties: Links:

Rechts:

A. Tibialis Posterior pulsaties: Links:

Rechts:

Capillaire refill: Links:

Rechts:

Trofische letsels: Links:

Rechts:

Oedeem: Links:

Rechts:

Operatielittekens:

Korstvorming op de sutuur, geen roodheid, pusevacuatie of zwelling

Met collegiale hoogachting,

Annex 2: Enquête - Questionnaire

Geachte collega,

Ik ben Michail Spyrantis, huisarts in opleiding (HAIO) bij dokter Lieve Deturck in Herent.

In samenspraak met Prof. Fourneau en Prof. Aertgeerts onderzoek ik verder de transmurale samenwerking tussen de huisarts en de vasculaire chirurg dat was twee jaar geleden begonnen met introduceren van een aangepaste patiëntenbrief met instructies voor de huisarts om een diagnose uit het ziekenhuis te integreren in het elektronisch medisch dossier (EMD) van de huisarts en hieraan een beslissingsondersteunend systeem te koppelen.

De dienst vaatheelkunde van het UZ Leuven stuurt een aangepaste patiëntenbrief met instructies voor de huisarts sinds 1ste februari 2018. Deze brief is verstuurd naar de huisartsen van alle patiënten die op de raadpleging perifeer arterieel vaatlijden gezien werden. U ontving sinds begin vorige jaar ook zo een brief.

Aan de hand van onderstaande enquête, die maximum tien minuten van uw tijd vraagt, peilen wij graag naar uw ervaringen met betrekking tot deze aangepaste brief. U kunt hieraan vrijblijvend deelnemen. Aanvullend wordt ook gevraagd naar en mogelijkheid om op een bepaald moment, via telefonisch overleg en via screen-sharing programma Teamviewer™, samen te kijken welke proces volgt u om de gegevens van de aangepaste brief te registreren in u EMD-pakket.
Na het verzamelen van alle enquêtes, alle antwoorden zullen geanonimiseerd worden en geen enkele patiënten data gaat geregistreerd of verder gepresenteerd worden.

Dit onderzoek werd goedgekeurd door de Ethische Comissie Onderzoek UZ/KU Leuven.

Indien u een contact voor vragen of andere zaken wenst, kunt u mijn altijd bereiken op de volgende e-mailadres: michail.spyrantis@student.kuleuven.be

Alvast bedankt voor uw medewerking

Met vriendelijke groet

Michail Spyrantis

Huisarts in Opleiding (HAIO),
KU Leuven
Met medewerking van Prof. Dr. Inge Fourneau en Prof. Dr. Bert Aertgeerts

Geïnformeerde toestemming

Ik, (naam en achternaam) …… dokter gespecialiseerd in huisartsgeneeskunde, verklaar hierbij uitdrukkelijk dat ik mijn geïnformeerde toestemming voor deelname aan dit onderzoek geef door deze vragenlijst in te vullen en terugsturen naar de onderzoekers van dit project.

Datum: ……

Handtekening: …….

(In elektronische vorm was dit omgezet naar een “Ja” of “Nee” antwoord)

Persoonlijke gegevens

Leeftijd:
- ☐ ≤ 30 jaar
- ☐ 31-40 jaar
- ☐ 41-50 jaar
- ☐ 51-60 jaar
- ☐ ≥ 61 jaar

Geslacht:
- ☐ Man
- ☐ Vrouw

Praktijkvorm:
- ☐ Solopraktijk
- ☐ Duopraktijk
- ☐ Groepspraktijk
- ☐ Wijksgezondheidscentrum

Welk elektronisch medisch dossier gebruikt u?
- ☐ CareConnect (Corilius)
- ☐ Daktari (Barista)
- ☐ HealthOne (HDMP)
- ☐ Medidoc (Corilius)
- ☐ Medigest (Corilius)
- ☐ Pricare (Figac)
- ☐ Prodoc (Cegeca)
- ☐ Windoc (CGM Belgium)
- ☐ Andere: . . . . . .

Vragenlijst

- Heeft u opgemerkt dat de vasculaire chirurgie een nieuwe aangepaste brief gebruikt voor een communicatie met u?
  - ☐ Ja: . . . . . .
  - ☐ Neen

- Registreerde u, voordat u deze brief ontving, de diagnose bij de lijst van zorgelementen op een gecodeerde manier?
  - ☐ Ja
  - ☐ Neen

- Heeft u naar aanleiding van de nieuwe brief de diagnose met bijhorende ICPC-codering genoteerd in uw dossier als zorgelement?

- ☐ Ja
- ☐ Neen, diagnose stond al in de lijst van zorgelementen
- ☐ Neen

- Heeft u de (nieuwe) medicatie geïmplementeerd in de lijst van de chronische medicatie?
  - ☐ Ja, alle medicatie geïmplementeerd
  - ☐ Ja, maar niet alle medicatie
  - ☐ Geen enkel medicatie geïmplementeerd
    Indien niet, waarom niet? . . . . . .

- Noteerde u, voordat u deze brief ontving, of de patiënt rookt of niet?
  - ☐ Ja
    Zo ja, registreerde u ook het aantal pakjaren? Ja / neen
    Zo ja, maakte u onderscheid tussen ex-roker, actieve roker en persoon die nooit heeft gerookt? Ja / neen
  - ☐ Neen

- Heeft u naar aanleiding van deze brief genoteerd of de patiënt rookt of niet?
  - ☐ Ja
  - ☐ Neen, stond al in EMD genoteerd
  - ☐ Neen

- Vindt u de aangepaste brief een meerwaarde?
  - ☐ Ja
    Zo ja, welke elementen in de brief vindt u positief? (meerdere antwoorden mogelijk)
    - ☐ Cardiovasculair en specifiek advies staat in begin van brief vermeld in plaats van op het einde
    - ☐ Er staat een ICPC-code bij de diagnose
    - ☐ De huisarts krijgt instructie om ICPC-code in te vullen als zorgelement in zijn/haar patiëntendossier
    - ☐ Andere: . . . . . .
  - ☐ Neen

- Wat vindt u van de onderstaande stelling:
  “Het advies van de vasculaire chirurg in verband met de cardiovasculaire preventie, dat in de nieuwe brief inbegrepen is, is een meerwaarde?

- ☐ Sterk mee eens
- ☐ Eens
- ☐ Neutraal
- ☐ Oneens
- ☐ Sterk mee oneens

- Heeft u suggesties om brief nog aantrekkelijker te maken?
  - ☐ Ja: . . . . . .
  - ☐ Neen

- Helpt deze brief u in een betere dagdagelijkse praktijkvoering?
  - ☐ Sterk mee eens
  - ☐ Eens
  - ☐ Neutraal
  - ☐ Oneens
  - ☐ Sterk mee oneens

- Vindt u de lay-out van deze brief een voorbeeld voor andere diensten?
  - ☐ Sterk mee eens
  - ☐ Eens
  - ☐ Neutraal
  - ☐ Oneens
  - ☐ Sterk mee oneens

- Is een klinisch beslissingsondersteunend systeem een meerwaarde in het EMD van de huisarts?
  - ☐ Sterk mee eens
  - ☐ Eens
  - ☐ Neutraal
  - ☐ Oneens
  - ☐ Sterk mee oneens

- Heeft u uw toestemming om telefonisch gecontacteerd te worden voor een eventueel overleg en screen-sharing sessie met Teamviewer™ programma om samen te overlopen uw proces van gecodeerde diagnose registratie in de EMD-pakket met gebruik van tweetal patiëntendossiers voorbeelden?
  - ☐ Ja
  - ☐ Nee

Indien u “Ja” hebt geantwoord op de vorige graag, op welke telefoonnummer wilt u graag gecontacteerd worden:
…….

Dank voor uw medewerking.

Annex 3: Teamviewer Screen-Sharing Assessment

Voorbeeld patiënt 1

- Registratie van hoofdiagnose?
  - ☐ Correcte registratie: ICPC codering en juiste plaats in EMD
  - ☐ Niet correcte registratie: geen codering
  - ☐ Niet correcte registratie: geen juiste plaats in EMD
  - ☐ Geen registratie
  - ☐ Niet van toepassing

- Registratie van rookgedrag?
  - ☐ Correcte registratie: ICPC codering en juiste plaats in EMD
  - ☐ Niet correcte registratie: geen codering
  - ☐ Niet correcte registratie: geen juiste plaats in EMD
  - ☐ Geen registratie
  - ☐ Niet van toepassing

- Registratie van hypertensie?
  - ☐ Correcte registratie: ICPC codering en juiste plaats in EMD
  - ☐ Niet correcte registratie: geen codering
  - ☐ Niet correcte registratie: geen juiste plaats in EMD
  - ☐ Geen registratie
  - ☐ Niet van toepassing

- Registratie van hyperlipidemie?
  - ☐ Correcte registratie: ICPC codering en juiste plaats in EMD
  - ☐ Niet correcte registratie: geen codering
  - ☐ Niet correcte registratie: geen juiste plaats in EMD
  - ☐ Geen registratie
  - ☐ Niet van toepassing

- Registratie van voorgestelde medicatie?
  - ☐ Correcte registratie: volledig en juiste plaats in EMD
  - ☐ Niet correcte registratie: niet volledig
  - ☐ Niet correcte registratie: geen juiste plaats in EMD
  - ☐ Geen registratie
  - ☐ Niet van toepassing

Voorbeeld patiënt 2

- Registratie van hoofdiagnose?
  - ☐ Correcte registratie: ICPC codering en juiste plaats in EMD
  - ☐ Niet correcte registratie: geen codering
  - ☐ Niet correcte registratie: geen juiste plaats in EMD
  - ☐ Geen registratie
  - ☐ Niet van toepassing

- Registratie van rookgedrag?
  - ☐ Correcte registratie: ICPC codering en juiste plaats in EMD
  - ☐ Niet correcte registratie: geen codering
  - ☐ Niet correcte registratie: geen juiste plaats in EMD
  - ☐ Geen registratie
  - ☐ Niet van toepassing

- Registratie van hypertensie?
  - ☐ Correcte registratie: ICPC codering en juiste plaats in EMD
  - ☐ Niet correcte registratie: geen codering
  - ☐ Niet correcte registratie: geen juiste plaats in EMD
  - ☐ Geen registratie
  - ☐ Niet van toepassing

- Registratie van hyperlipidemie?
  - ☐ Correcte registratie: ICPC codering en juiste plaats in EMD
  - ☐ Niet correcte registratie: geen codering
  - ☐ Niet correcte registratie: geen juiste plaats in EMD
  - ☐ Geen registratie
  - ☐ Niet van toepassing

- Registratie van voorgestelde medicatie?
  - ☐ Correcte registratie: volledig en juiste plaats in EMD
  - ☐ Niet correcte registratie: niet volledig
  - ☐ Niet correcte registratie: geen juiste plaats in EMD
  - ☐ Geen registratie
  - ☐ Niet van toepassing

Annex 4: Approved Protocol

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MASTERPAPER PROTOCOL: PROSPECTIVE STUDY

1. APPLICANTS

*Alhoewel het formulier in het Engels is, kan de aanvraag zowel in het **Nederlands** als in het **Engels** worden voorbereid. De blauwe tekstvakken die uitleg bieden bij elk onderdeel mogen verwijderd worden bij het indienen van de aanvraag. Bekijk de website voor voorbeelden en tekstsuggesties bij de verschillende onderdelen.*
(https://med.kuleuven.be/nl/obc/Documenten)

*Elke **herindiening of amendement** moet in **'track changes' of in highlight** worden gemaakt zodat aanpassingen duidelijk zijn. Verder dient ook de bestandsnaam aangepast te worden naar 'herindiening MP### versie#' of 'amendement MP### versie#'. Het MP-nummer kan je teruqvinden via SCONE (overzicht masterproef), het versienummer bepaal je zelf: te beginnen bij 1 en telkens met 1 te verhogen wanneer gevraagd wordt om nieuwe aanpassingen te doen.*

*This application can be prepared in **Dutch** or in **English**. The blue text boxes with explanation can be deleted when submitting the application. See the website for examples and text suggestion for the various sections.*
(https://med.kuleuven.be/nl/obc/Documents_en)

*Every **resubmission or amendment** should be done in **'track changes' or in 'highlight'** in order to identify the changes. The file name must also be changed to 'resubmission MP### version#' or 'amendment MP## version#'. The MP-number can be found via SCONE (overview master thesis), the version number is up to you: starting at 1 and increasing by 1 each time you are asked to make new changes.*

Protocol - full title	-Communication between General Practitioner and Vascular Surgery: a year after the introduction of the new type of discharge letter. -(Oude titel)Transitie medische gegevens tussen ziekenhuis en huisartsen.
Version 1: Date submission	Date:Click here to enter a date.
Version 2: Date resubmission	(to add in case of resubmission) Date:Click here to enter a date.
Version 3: Date third submission	(to add in case of third submission) Date:Click here to enter a date.
Principal Investigator – Promoter	Name: Prof. Bert Aertgeerts
	Telephone: +32 16 37 72 78
	E-mail: bert.aertgeerts@kuleuven.be
Following both questions should be answered:	
The principal investigator is a health professional according to the Law of 10 May 2015. YES ■ NO □	
The supervisor has read and approved the submission for ethics approval. YES □	
Co-Investigator – Co-Promoter	Name: Prof. Inge Fourneau
	Telephone: +32 16 34 69 49

	E-mail: inge.fourneau@kuleuven.be
The co- investigator is a health professional according to the Law of 10 May 2015. YES ■ NO □	
Sub-investigator – Student(s)	Name: Michail Spyrantis
	Student number: s0217760
	Telephone: 0032487181226
	E-mail: michail.spyrantis@student.kuleuven.be or spyrantis.michael@gmail.com

2. BACKGROUND AND RATIONALE

Explain the background and scientific relevance of the planned research. This should be done in a sufficiently elaborated way so that readers can get a sufficient understanding of the performed research in the area and the research questions of this project.

The employment of Electronic Health Records (EHR) programs, as a method for registration of a patient's medical information, is nowadays becoming widespread in the general practitioners' practices of developed countries.[1] The primary use of an EHR program is the registration of medical information, but it additionally aims at providing a structured exchange of information between general practitioners working in the same environment and between general practitioners and doctors of other specialties as well.

However, at this point the registration of data in the EHR is far from optimal. Incomplete data, suboptimal registration, different coding of medical data, suboptimal communication between doctors, limited worktime, are some elements that function as obstacles for the right registration.[2–5] Thus, the usage of a modern EHR program remains far from optimal and as a result the communication between doctors and the final aim of follow-up and therapy of the patient limited too.

Medical data registration can be done via a variation of methods. By far the easiest method would be the free format registration of medical information, but simultaneously also the most inefficient, for it provides little to no existent structure and furthermore little to no possibility for further processing of data. Taking that into account, a possibility for further optimization would be the employment of medical data coding. The examples of the International Classification of Primary Care (ICPC) and the International Classification of Diseases (ICD) are two of the biggest steps in structured registration of medical data, considering diagnosis, but also registration of co-morbidities, intolerances, allergies and antecedents. A registration method of medical data that could be widely recognizable and could be used for communication between doctors of different specialties and other health providers. [6–9]

Furthermore, the employment of the aforementioned coding systems could function as a trigger for the implementation of clinical decision support systems (CDSS) and the execution of clinical audits. With the use of the CDSS the aim is to link a specific code to a decision tree linked to the latest evidence-based medicine and afterwards provide the general practitioner with an optimal therapy scheme suggestions or follow-up workflows adjusted to the patient's characteristics;[10–12] a useful tool that begins to spread and becomes even more popular via its integration in the EHR programs. On the other hand, a structured

coding is considered to be a baseline for the execution of clinical audits with all the advantages that they could offer in research and finally in the improvement of the provided health service. [13,14]

However, to take advantage of the CDSS and implement clinical audits to finally improve the medical service provided or go a step further for a "personalized medicine"[15], structured medical data is a necessity. To optimize that to a greater extent, an optimal flow of medical information from the hospital to the general practitioner is crucial.

Nonetheless, adjacent to an already problematic medical registration, the transition of medical information from the hospital to the general practice is still happening in a deficient manner. If we set aside the old-fashioned way of communication through handwritten hospital discharge reports that tend to be abandoned and are being replaced by digital means, there are still a few shortcomings for optimal transition. Letters not arriving on time, not containing the necessary follow-up information or missing the diagnose, are some of the shortcomings that seem to arise when literature is examined.[16–18]

An option to make the discharge letters more practical would be by directly including the diagnostic coding in the discharge letter sent from the hospital to the GP. Such approaches were already researched by Kliakovic et al, 2004[19] and Murphy et al. 2017[20] with positive acceptance for implementation. Additionally, in Belgium, the first step for such an optimization was set by a research project with the collaboration of general practitioners and the unit of vascular surgery of UZ Leuven in 2018.[21] The Belgian standard of discharge letter communication is done by a form of pdf file letter that is digitally sent to general practitioners and afterwards integrated in the EHR program. For years the structure remained unchanged including the following: patient's information, medical history, reason for contact or hospitalization, anamnesis, risk factors, laboratory tests and medical imaging, followed by the last section where the health problem was discussed, diagnosis presented, follow-up and the new medication scheme suggested. The new approach suggested by the research project was to have an already ICD10/ICPC2 coded diagnosis, as well as coded co-morbidities followed by cardiovascular prevention suggestions and proposed chronic medication, included in the beginning of the discharge letter (Annex 1).

Despite it not being a wide or nationally spread project, enumerating at the end 30 participants, by means of questionnaires, this new approach for discharge letters seems to have received a positive acceptance at the level of the GPs. Two thirds of the questioned GPs considered the new type of discharge letter of the vascular surgery unit as an added value in communication between GPs and hospital, with half of them additionally considering it as an added value in their everyday practice. More than the two thirds reported that they registered the coded diagnosis, as well as the suggested medication scheme in their EHR program.

The scope of this study is to examine the impact of the new type of the discharge letter of the vascular unit on the coded registration of the diagnostic data in the EHR programs of the GPs one year later.

3. STUDY OBJECTIVES

Explain the aims and objectives of your study.

The primary outcome to be extracted from the questionnaire and the screen sharing is:

- Impact of implementation of the new discharge letter a year later after its introduction, measured in percentage of acceptance and usage in the general practice.

Further secondary outcomes interesting to investigate:

- Percentage of registered coded information from the questionnaires corresponding to percentage of the correctly coded information retrieved from the Teamviewer screen-sharing session.
- Percentage of positive acceptance.
- Percentage of GPs that consider the new discharge type letter a contribution to a better practice.
- Percentage of the GPs that consider the included suggested cardiovascular prevention advice from the surgeon as a necessary.
- Percentage of GPs that consider the CDSS tools as an advantage in their daily practice.

4. RESEARCH METHOD

Present the methodologies and explain potential ethical implications of the planned methodologies.

A list extraction will be performed from the EHR program used by the vascular surgery unit (KWS-program), providing all the GPs that were designated as recipients of the new type of discharge letter during the period between February 1st, 2018 and December 31st, 2018. (see annex 3)

There will be an exclusion of all GPs that participate in this study as researchers, or direct/ indirect supervisors. Further, GPs without an email address provided to the vascular surgery unit will be also excluded. The remaining GPs will be sent an email, including a link to the questionnaire accompanied by informed consent (an example can be found in annex 1 and 2). Participation will be set on a free will basis. After an initial period of 2-3 weeks, the GPs that did not respond, will be reminded by means of telephone contact and/or an email to participate in this study if they are still willing to.

All the answered questionnaires will be collected, and a separate list will be created for all the GPs that answered positively on the suggestion of being contacted by telephone for a screen-sharing session with the use of the Teamviewer™ program. A random selection of GPs will be made, and the vascular surgery unit will provide a new list with two example patients for who these GPs received the new type of discharge letter. The information provided about the patients will name, surname and birth date, the minimum necessary information for medical file recognition.

Afterwards these GPs will be contacted by telephone and asked to initiate a screen-sharing session with the use of the Teamviewer™ program. During this session the GPs will be asked to show their way of registering the coded information in their EHR program, as well as to showcase their already registered information with the medical files of the two example patients provided by the vascular surgery unit. GPs will be assessed separately for the registration of the coded diagnosis, the coded co-morbities, and the registration the proposed medication scheme (Annex 3). Attention will be given to whether the coded diagnosis and co-morbities are registered in the respective antecedents and care elements sections of the EHR program, as well as the registration of the medication scheme in the chronic medication section respectively. Only the work process of the GPs, as well as the right or wrong manner of coded medical data registration will be assessed during this session. No medical information concerning the example patients will be recorded at any time of this process or used further in analysis and after the end of the screen-sharing session any information regarding patients will be deleted.

Before any action taken the ethical approval for this study will be sought from the Ethics Committee of the KU Leuven University (Onderwijs-BegeleidingsComissie voor ethische goedkeuring van masterproeven van de Groep Biomedische Wetenschappen).

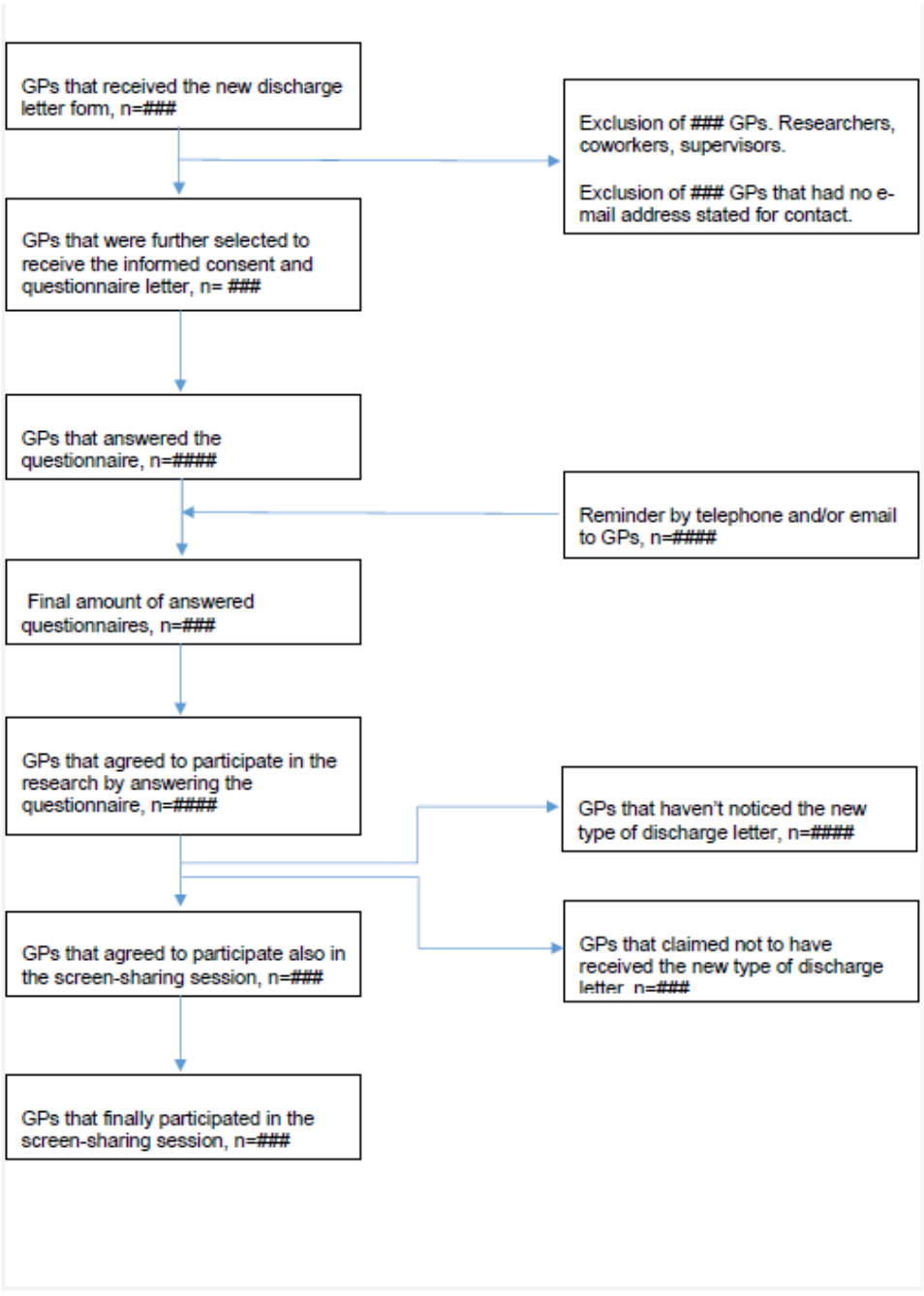
5. SELECTION AND WITHDRAWAL OF PARTICIPANTS

5.1 Inclusion and exclusion criteria

List details such as age, sex, disease, characteristics etc., under which a participant is deemed to be suitable (eligible) to participate into the study. Informed consent to participate must be stated as an inclusion criterion. The study will require prior informed consent of the participants, or their legal representatives, to participate in the study. For all clinical studies, the investigators and participating sites shall obtain a signed informed consent form from all participants prior to their enrollment and participation in the study in compliance with all applicable laws, regulations and the approval of the OBC/Ethics Committee. The Investigators and participating sites shall retain such informed consent forms in accordance with the requirement of all applicable regulatory agencies and laws. The informed consent form must be integrated in this template.

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5.2 Expected duration

Specify the expected duration and define the end of the study for the study participant.

Depending on the time of approval the intervention part of the study is expected to span over 2 months, February 2020 until end March 2020. That is also the period when the GPs will be contacted. Analysis of the collected data begin March 2020 until end April 2020. Final presentation of the results during the deadline for the master thesis of which this study is complete part of, beginning May 2020.

5.3 Recruitment

Specify who will recruit the participants and how and by whom the participants will be approached for inclusion and obtainment of informed consent.

The recruitment, as well as all the communication and acquirement of informed consent will done by the sub-investigator-student mentioned above, always under the guidance of the principal investigator-promotor also mentioned above.

6. ANALYSIS

Describe the measures taken to avoid, or at least minimize, biases. Give the number of participants to be enrolled, together with the rationale for the sample size. Describe also methods for data analysis.

The data from all the questionnaires will be collected and transformed to digital data in the form of excel files. Afterwards they will be presented with charts with the aid of descriptive statistics analysis. This study will be a descriptive study. Furthermore, it will not be blinded.

7. DATA HANDLING AND MANAGEMENT

7.1 Data storage and management

Explain which type of data you are using, how the privacy of the participants is being protected (e.g. coding or anonymization), how the data is safely stored, and what will happen to the data at the end of the project.

All the data acquired during this study will remain confidential and handled with respect to the privacy of the participants.

After the collection of the questionnaires, they will be anonymized without any reference to names, initials, date of birth, home address, address of private practice. No telephone communication will be recorded and any communication by post or email will be destroyed or deleted after the end of the study. All the data collected from the questionnaires will be transformed to digital data (excel file) and will be stored on the computer of the student and promotor protected by password during the whole

duration of the study. The personal data collected of the example patients will be temporarily stored and immediately deleted after its respective usage as described in the research method. No medical data concerning the patients will be collected at any point of this study or included in the analysis.

In the master paper, as well as in the journal article that may result from it, all the used data and results will remain anonymous. At the end of the study, the data (which will be already anonymous) will be delivered to the promotor of this study for further safe storage. In accordance with the KU Leuven policy these files will be kept for at least five years.

7.2 Declaration of Confidentiality and Careful Management of Information and Personal Data

Please read carefully following section. By participating in this project you commit to following declaration.

In the framework of his / her Master's thesis, the student(s) will have access to all kinds of data, information, results and documents, including personal data which is not exclusively limited to patient data (the "Information"). In order to ensure the confidentiality of this Information and the privacy of those involved, within the framework of his / her Master's thesis the student(s) should always deal with the Information with the greatest care and discretion.

Data collected in the framework of a Master's thesis, in particular research related to patients and including the collection and analysis of personal data, requires the utmost of care and discretion. Therefore, at all times the student must observe complete confidentiality with respect to the Information he / she has collected during the course of his / her Master's thesis.

In performing this research, the student(s) commit(s) him/herself to the following confidentiality obligations:

- *He / she accepts, during and after the completion of the Master's thesis, the obligation to strictly observe the confidentiality of the Information he / she has collected and the activities to which he / she has participated, and regarding the patients, healthy volunteers and the staff members with whom he / she comes into contact;*
- *He / she will only process and collect data that is relevant and necessary for his / her Master's thesis;*
- *He / she will not share information with persons not directly involved within the framework of his / her research;*
- *He / she will take all necessary steps to protect the confidentiality of Information and the privacy of those involved;*
- *He / she will handle with care and responsibility the Information and the access granted to him/her to information systems and digital media.*

All investigators shall treat all information and data relating to the study as confidential and shall not disclose such information to third parties or use such information for any purpose other than the performance of the study. The collection, processing and disclosure of personal data, such as participants' health and medical information, is subject to compliance with applicable personal data protection legislation.

8. ASSESSMENT OF RISKS AND SAFETY

In case of safety issues (adverse events / serious adverse events) the student will promptly contact the Principal Investigator / Promoter who will be responsible for follow up. In the information letter to the participants the name of the Principal Investigator has also been integrated.

Due the type of study no adverse events or safety issues are expected.

On the questionnaires used, the names as well as the contact information with the investigators (student-promotor) will be stated.

9. APPROVAL

Data can only be collected if the head of the unit(s) or department(s) where the data will be collected has been informed of the study and has approved the study.

Hereby we confirm that data collection is performed with approval of the head of the respective unit(s) or department(s) where data collecting is taking place.

10. PUBLICATION POLICY

Please read carefully following section. By participating in this project you commit to following declaration.

Publications will be coordinated by the Principal Investigator. Authorship to publications will be determined in accordance with the requirements published by the International Committee of Medical Journal Editors and in accordance with the requirements of the respective journal.

11. DIRECT ACCESS TO SOURCE DATA AND DOCUMENTS

Please read carefully following section

The investigator(s) and the institution(s) will permit study-related monitoring, audits, ethical review and regulatory inspections (where appropriate) by providing direct access to source data.

12. REFERENCES

Please add references mentioned above

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13. ANNEXES

A template for informed consent (or template information letter for anonymous questionnaires) has been developed and is available on https://med.kuleuven.be/nl/obc/Documenten or https://med.kuleuven.be/nl/obc/Documents_en
Those must be used as a basis and adapted where necessary.

In case an alternative template is being used, a motivation should be provided here.

Please copy your informed consent or information letter here.

Annex 1

(Due to the nature of this study, as well as because of participants being medical doctors, an alternative simple and short descriptive letter and informed consent is used. Considering also the fact that both will be electronically sent.)

Geachte collega,

Ik ben Michail Spyrantis, huisarts in opleiding (HAIO) bij dokter Lieve Deturck in Herent.

In samenspraak met Prof. Fourneau en Prof. Aertgeerts onderzoek ik verder de transmurale samenwerking tussen de huisarts en de vasculaire chirurg dat was twee jaar geleden begonnen met introduceren van een aangepaste patiëntenbrief met instructies voor de huisarts om een diagnose uit het ziekenhuis te integreren in het elektronisch medisch dossier (EMD) van de huisarts en hieraan een beslissingsondersteunend systeem te koppelen.

De dienst vaatheelkunde van het UZ Leuven stuurt een aangepaste patiëntenbrief met instructies voor de huisarts sinds 1ste februari 2018. Deze brief is verstuurd naar de huisartsen van alle patiënten die op de raadpleging perifeer arterieel vaatlijden gezien werden. U ontving sinds begin vorige jaar ook zo een brief.

Aan de hand van onderstaande enquête, die maximum tien minuten van uw tijd vraagt, peilen wij graag naar uw ervaringen met betrekking tot deze aangepaste brief. U kunt hieraan vrijblijvend deelnemen. Aanvullend wordt ook gevraagd naar en mogelijkheid om op een bepaald moment, via

Annex 5: Ethical Committee approval

Our reference: MP009804
Your reference: Master's thesis study: Transitie medische gegevens tussen ziekenhuis en huisartsen.
Leuven, 04-02-2020

DEFINITIVE FAVOURABLE ADVICE

Dear Bert Aertgeerts
Dear Michail Spyrantis

The Research Ethics Committee UZ/KU Leuven hereby grants favourable advice to the proposed study, as it was described in the protocol. The Commission is of the opinion that from an ethical standpoint there are no objections to the proposed study. The study was approved on 04-02-2020

Deze studie wil de impact van een nieuwe verslagbrief aan huisartsen evalueren. De Commissie heeft geen bezwaren bij deze studie.

Emailuitnodiging aan huisartsen die in het verleden al deelnamen aan dergelijke studie, opsturen van vragenlijst

Given that the study takes the form of a Master's thesis within the Group Biomedical Science, the application to the Research Ethics Committee UZ/KU Leuven was submitted to the Educational-Support Committee.

The Committee has no objection to the project on the basis of confidential treatment of the data and compliance with the Belgian legislation concerning privacy. The Research Ethics Committee UZ/KU Leuven wishes for the head researcher / promoter of the study to be aware of their responsibilities with regard to the privacy of personal / patient details, when in contact with living persons, patients, and / or contained within electronic medical records, including the correct implementation by employees and students.

This favorable advice concerns the submission of 21-01-2020 and is given for the duration of the Master's thesis of the student(s) concerned. Any amendment to the protocol will invalidate this favorable advice. In that case, you must submit an amendment for advice to the committee that previously approved your file.

The Committee confirms that they work in accordance with the ICH-GCP principles (International Conference on Harmonisation Guidelines on Good Clinical Practice), with the most recent verison of the Helsinki Declaration, and with applicable laws and regulations.

The Committee confirms that in case of a conflict of interest, the members concerned have not participated in decision regarding the study.

Kind regards,

Prof. dr. Minne Casteels
President / Chairperson
Research Ethics Committee UZ/KU Leuven

Prof. dr. Pascal Borry
President / Chairperson
Education-Support Committee for Medical Ethics KU Leuven