

SYNTHESIS

AUTOLOGOUS BREAST RECONSTRUCTION TECHNIQUES AFTER MAMMARY RESECTION: TIME MEASUREMENTS FOR A POTENTIAL RE-EVALUATION OF THE SURGEON FEE



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AUTOLOGOUS BREAST RECONSTRUCTION TECHNIQUES AFTER MAMMARY RESECTION: TIME MEASUREMENTS FOR A POTENTIAL RE-EVALUATION OF THE SURGEON FEE

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■ FOREWORD

It is uncommon that we are not convinced by the results of one of our reports. Let's be clear: we performed the requested calculations with all the methodological rigor required and we are confident in the quality of our work. Nevertheless, from the start, we were aware that it was the question itself that was problematic.

The disagreement between plastic surgeons and the NIHDI around the "reasonable fees" that could be requested for an autologous breast reconstruction illustrates what we will face in the years to come if our system does not address the root of the problem. Indeed, we continue to use the current nomenclature, which has accumulated over the years a number of unlikely crafts and ad hoc solutions that appeared here and there more through negotiations rather than based on objective data.

With over fifty years, this outdated construction suffers from a number of poorly explained inconsistencies. The real answer to the question that was asked - what would be a reasonable fee for autologous breast reconstruction? – must not be just another band-aid of our nomenclature. To ultimately obtain fair and equitable fees, without the incongruous disparity we know today, there is no other alternative than a global approach: a full revision of the nomenclature, that values the physical labor as basis and that then incorporates considerations of experience, expertise, risk, discomfort, etc.

Going back to our answer, it is only a temporary solution to a problem that seems to become too acute for waiting the end (or beginning?) of the gigantic work of a full revision of the nomenclature. Indeed, it would be unfair that women with breast cancer remain the hostages of a situation that does not concern them.

Christian LÉONARD
Deputy general director

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■ KEY MESSAGES

- Belgian plastic surgeons consider that their fees for an autologous breast reconstruction are insufficient. To compensate for this shortfall, they charge to patients the so-called "aesthetic supplements", which can amount to several thousand euros, making access to these interventions difficult for a number of patients. To find a solution for this problem, negotiations are planned between the RIZIV-INAMI and representatives of plastic surgeons.
- The KCE has been asked to provide as soon as possible objective time and cost data to serve as basis of discussion during these negotiations. The objective is to obtain an appropriate and reasonable remuneration of plastic surgeons for autologous breast reconstruction procedures.
- The KCE believes that a revision of the nomenclature is necessary (see the conceptual framework for the reform of the Belgian hospital payment system, KCE report 229). However, such a revision must necessarily be global and not limited to a specific intervention within a specialty. In order to still provide the figures requested within the deadlines imposed by the imminence of negotiations, we have developed a methodology based on actual time measurements of the interventions and different scenarios of "cost per hour" to value the surgical acts of an autologous breast reconstruction.
- The figures obtained show significant variations depending on the scenario followed. For a unilateral DIEP reconstruction, the most commonly encountered technique in our country, the average values range from € 1125 minimum (which is less than the current RIZIV-INAMI fee of €1527) up to € 2584 maximum. This amount can further be increased if we take into account some secondary interventions, such as a lipofilling, a liposuction, a nipple reconstruction, a tattoo of the areola, or a scar correction.
- Given the methodological limitations of this study and the variability of results, these figures can only be used as a temporary solution, awaiting a more global revision of the nomenclature across but also within medical specialties. During this global revision, other factors must be taken into account, such as the level of experience and expertise of the surgeon required, the risks inherent in the act (including the medico-legal risk), the stress, etc.
- The big challenge in the future will be to define, from a societal perspective, what would be a fair and reasonable base hourly income for a physician.



■ SYNTHESIS

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LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
BFM	Budget van Financiële Middelen
BMF	Budget des Moyens Financiers
DIEP	Deep Inferior Epigastric Perforator
FTE	Full Time Equivalent
GAP	Gluteal Artery Perforator
HBD	Hospital Billing Data
HTA	Health Technology Assessment
ICD-9-CM	International Classification of Diseases, version 9, Clinical Modification
IGAP	Inferior Gluteal Artery Perforator
LAP	Lumbar Artery Perforator
LDF	Latissimus Dorsi Flap
MCD	Minimal Clinical Data
MSVA	MicroSurgical Vascular Anastomosis
NHDB	National Hospitals stays Database
PAP	Profunda Artery Perforator
RIZIV-INAMI	National Institute for Health and Disability Insurance
SD	Standard Deviation
SGAP	Superior Gluteal Artery Perforator
SIEA	Superficial Inferior Epigastric Artery
SIEP	Superficial Inferior Epigastric Perforator
TAP / TDAP	Thoracodorsal Artery Perforator
TMG	Transverse Musculocutaneous Gracilis
TRAM	Transverse Abdominal Muscle
TUG	Transverse Upper Gracilis



1. INTRODUCTION

1.1. Background and objectives

In the past years, complaints have grown by women who must pay considerable supplements for autologous breast reconstruction after mastectomy. As current reimbursement levels are considered insufficient by plastic surgeons, so-called “aesthetic supplements” are charged. The position of the national institute for health and disability insurance (RIZIV-INAMI), however, is that the reimbursement of the procedure should cover the full procedure and that no “aesthetic supplements” should be billed. Past negotiations between the plastic surgeons and the RIZIV-INAMI already led to reappraisals of the tariffs. These reappraisals however were judged insufficient by the plastic surgeons. They insisted with the former Minister of Health for an increased reimbursement. It is in response to this question that the former Minister commissioned a costing study to the KCE. The primary aim of this study is therefore to provide objective cost and time data on autologous breast reconstruction procedures, including adjustments, to serve as a basis of discussions for a possible revision of the RIZIV-INAMI fee.

A secondary aim is to give some elements about the medical context regarding autologous breast reconstruction in terms of effectiveness and safety of these procedures compared to alternatives as well as a description of the current practice in Belgium.

1.2. Research questions

The study aims at answering the following research questions

- What is the efficacy and safety of autologous breast reconstruction techniques compared to the alternatives?
- What is the current Belgian practice?
- What is the estimated “surgeon cost” for the different types and subcomponents of an autologous breast reconstruction episode?

Research question 3 was mainly outsourced to Möbius Business Redesign nv/sa. The data collection was performed in collaboration with Belgian hospitals performing autologous reconstructions.

1.3. Description of autologous breast reconstruction interventions

1.3.1. *The primary reconstruction or the flap transfer*

Autologous breast reconstruction interventions can be categorized as:

- Unilateral (i.e. reconstruction of one breast) or bilateral interventions (i.e. reconstruction of both breasts);
- Immediate (i.e. at the same time of the mastectomy) or delayed (i.e. at a different time; e.g. after chemo- and/or radiotherapy)

Based on main surgical characteristics we can group autologous breast reconstructions in two main types:

- Reconstructions by means of an autologous myo-cutaneous flap with a vascular pedicle that is preserved (the tissue remains partly attached to the donor site). Such flaps are called pedicled, transposition flaps or tunnelled flaps. Standard TRAM as well as LDF belong to this category. Yet other variants exist (see Table 1).
- Reconstructions by means of an autologous myo-cutaneous flap with a vascular pedicle that is carefully prepared, next cut and then re-implanted on a new axillo-pectoral or intercostal vascular pedicle by means of a micro-surgical vascular anastomosis (MSVA). Such flaps are called free flaps. Examples are DIEP, SIEA and GAP, but other variants exist (see Table 1).

The list of techniques can be found in Table 1 and a more detailed description is presented in section 1.3 of the scientific report.



Table 1 – Description of the autologous breast reconstruction with flap

Abbreviation	Pedicled / Free flap	Full term
Pedicled (or attached) TRAM flap	Pedicled	Pedicled (or attached) Transverse Rectus Abdominis Myo-cutaneous flap
Free TRAM flap	Free	Free Transverse Rectus Abdominis Myo-cutaneous flap
DIEP flap	Free	Deep Inferior Epigastric Perforator Artery
SIEA flap / SIEP flap	Free	Superficial Inferior Epigastric Artery flap / (also called) Superficial Inferior Epigastric Perforator
LDF	Pedicled	Latissimus Dorsi Flap
LAP flap	Free	Lumbar Artery Perforator Flap
SGAP flap / Hip flap	Free	Superior gluteal artery perforator flap or gluteal perforator hip flap
IGAP flap	Free	Inferior gluteal artery perforator flap
TUG/TMG flap	Free	Transverse upper gracilis flap / transverse musculocutaneous gracilis
PAP flap	Free	Profunda artery perforator flap

1.3.2. Secondary interventions

Following the “flap transfer”, additional interventions can be performed, either immediately, i.e. during the reconstruction, or delayed.

Adjustments of the flap and nipple reconstruction

Adjustments can be done on the reconstructed breast, i.e. reconstruction of the nipple-areola complex, tattooing of the areola, implantation of a prosthesis (e.g. for LDF or TAP flap), or fat grafting (i.e. fat is removed from the thighs, flanks or abdomen using liposuction and is injected into the reconstructed breast (lipofilling) after having processed the fat to extract the living cells). At present, only nipple reconstruction and tattoo are reimbursed in Belgium.

Symmetrization procedures

The reconstructed breast may not droop like the natural breast and symmetrization procedures can be done, such as augmentation (implantation of a prosthesis), reduction or lifting (mastopexy) of the breast. At present, symmetrization procedures are reimbursed in Belgium under one RIZIV-INAMI code.

Other adjustments

Liposuction or lipofilling can also be done on the donor site and other sites. Other interventions concerns for example reconstruction of the umbilicus. Hernias or bulges can also occur in the abdominal donor site and surgical repair in this case can be performed. clinical effectiveness and safety of autologous breast reconstruction



1.4. Introduction

The aim of this section is to give some medical context on autologous breast reconstructions in terms of effectiveness and safety. The research questions elaborated in the present chapter are limited to the following questions:

- In women who underwent a mastectomy, what is the clinical effectiveness in terms of patient satisfaction (quality of life, body image, sexuality, etc.) in those women who had an autologous breast reconstruction, compared with women who had a breast reconstruction with implants, or a mastectomy without reconstruction?
- What are the adverse outcomes associated with autologous breast reconstruction?
- What is the impact of radiotherapy on autologous breast reconstruction?

1.5. Method

A literature review was performed, solely based on systematic reviews because of time constraints and because the main focus of the report is on the “physician cost” of breast reconstructions. More recent studies, not yet adopted in systematic literature reviews, are hence not included.

The international standards for performing literature reviews were followed (e.g. definition of a PICO, quality appraisal, etc) and details can be found in the scientific report.

1.6. Results

1.6.1. In women who underwent a mastectomy, what is the clinical effectiveness in terms of patient satisfaction (quality of life, body image, sexuality, etc.) in those women who had an autologous breast reconstruction?

Based on the retrieved literature, it was difficult to formulate firm conclusions because the studies (included in the systematic reviews) had several methodological flaws. Often the sample size is small, the criteria used (e.g. what is ‘satisfaction’) are not clearly stated and the assessment tools are non-validated. Also, at present it is not clear what the ideal point of time is to evaluate patient satisfaction after breast reconstruction. In addition, it is very plausible that women who desire to have their breast reconstructed differ already before the breast reconstruction from women who do not. Without knowing the preoperative characteristics of women in both groups, it is difficult to know the effects of reconstruction.

Due to these (and other) limitations (see the scientific report, chapter 3), we have to conclude that at present, there is insufficient scientific evidence to support or refute that patient satisfaction is better, equal or worse in women who had an autologous breast reconstruction compared with women who had a breast reconstruction with implants, or a mastectomy without reconstruction.



1.6.2. *What are the adverse outcomes associated with autologous breast reconstruction*

The following complications associated with autologous breast reconstructions have been reported in the medical literature: total flap failure, infections, fat necrosis^a, wound dehiscence, haematoma or seroma, and vascular complications. The incidence of these complications vary among studies.

Again, we have to be very prudent in the interpretation of the reported results because of the methodological limitations of the included studies (see scientific report for more details). Rarely the experience of the surgical team is taken into account. Often follow-up is very short, probably too short to draw meaningful conclusions. But, what is even more important: none of the studies were randomised, hence selection bias is highly probable, although it is very well realised that randomised studies are difficult to perform in case of breast reconstruction because treatment choice depends largely on a patient's personal preference.

1.6.3. *What is the impact of radiotherapy on autologous breast reconstruction?*

In case of immediate reconstruction, radiotherapy (if any) takes place after the intervention whereas in case of delayed reconstruction, radiotherapy takes place after mastectomy and before reconstruction. Based on the retrieved literature we had to conclude that at present, there is insufficient scientific evidence to conclude that radiotherapy after autologous breast reconstruction increases the overall complication rate, the chance of reconstructive failure, fat necrosis, need for revisional surgery or volume loss. The existing scientific evidence suggests that radiotherapy after autologous breast reconstruction may increase the chance of fibrosis and/or contracture events. And with regard to pre-reconstructive radiotherapy, there was also insufficient scientific evidence to evaluate its impact on the clinical outcomes of autologous breast reconstructions.

^a Fat necrosis presents as a nodule or mass that can be palpated after reconstruction.¹⁶ Although fat necrosis is not inherently dangerous, it can mimic breast cancer recurrence both clinically and radiographically. When it

2. BELGIAN PRACTICE

2.1. Objectives and method

The aim of this chapter is to get an insight in actual Belgian hospital practice concerning breast reconstructions. Data were obtained from the entire national hospital stays database (NHDB) including coded clinical data (Minimal Clinical Data - MCD) as well as reimbursed data under the national health insurance (Hospital Billing data - HBD). Details on data extraction and validation can be found in the scientific reports (section 3.2).

The period covered is 2008-2011. Starting year was 2008 because 2007 was hallmarked by profound changes in hospital financing and MCD data registration model. Ending year is 2011 as it is the last available year of linked hospital data. Because RIZIV-INAMI accountancy department also keeps annual records per intervention performed and booked in what is called Doc N and that in these Doc N, 2012-2013 data are available, these data were also used to give an idea of the recent trends.

It should also be noted that the RIZIV-INAMI nomenclature of mammary resections was thoroughly changed in 2008, with obsolete codes being abrogated and many new ones being introduced. Such a change explains some differences that can be observed in 2008 compared to the following years (see the scientific report and appendix 4).

mimics cancer recurrence, fat necrosis can lead to patient anxiety and additional biopsies.¹⁸ Fat necrosis can also negatively affect cosmetic outcome by causing distortion of the reconstructed breast.¹³



2.2. Results

2.2.1. Breast reconstructions

On the period studied, 1 out of 7 women (beyond 15 years old) had a post-mastectomy reconstruction. The trend is currently rising to an estimated 1/5 (according to Doc N 2012-2013 of the RIZIV-INAMI).

Among women who had a reconstruction, 1/2 had reconstruction by prosthesis, 1/3 DIEP and 1/8 LDF. Moreover, 1/4 were early reconstructions, overwhelming majority was immediate, and 3/4 were delayed.

2.2.2. Secondary interventions

Hetero-lateral remodelling occurred in 4 out of 9 women post reconstruction, from which 2/5 were immediate and 3/5 delayed.

Nipple reconstruction was performed in 2 out of 5 women post reconstruction, from which 1/8 were performed early and 7/8 delayed.

Trends for both are rising to around 1 out of 2 women according to Doc N 2012-2013.

2.2.3. Complications

Implant related complications were estimated to 23% overall (early as well as - predominantly – delayed complications). Implant removals were estimated to 16% and implant revisions to 8%.

Overall surgical site related complications, early as well as delayed, were estimated to 18% for autologous breast reconstructions with flap; 5% for breast implants; 20% for hetero-lateral remodelling; 17% for nipple reconstruction (predominantly for delayed scar problems, which explains this high rate).

In-hospital mortality was estimated to 6 out of 10 000 women.

Among post-reconstruction stays (any type i.e. both implant and flap), 13% reported deformity of reconstructed breast.

High rates of post-reconstruction skin grafting were also observed (see the scientific report), suggesting the need for long term 'surgical maintenance'.

As the studied period is limited to 4 years, these rates must be interpreted with caution.

2.2.4. Referential all-inclusive health insurance costs (per stay)

The following all-inclusive health insurance costs (per stay) were obtained:

- Reconstruction by implant: € 1 650
- Free flap with MSVA: € 6 300
- Pedicled transposition flap: € 3 700
- Hetero-lateral remodelling & nipple reconstruction: € 2 000 each

See the section 3.2.12 of the scientific report for more details on how these referential health insurance costs for an entire hospital stay were calculated.

2.3. Limitations

Limitations related to the use of these databases can be found in section 3.2 and 3.4 of the scientific report.



3. TIME MEASUREMENTS AND VALUATION SCENARIOS FOR THE “SURGEON COST”

3.1. Introduction

3.1.1. Scope and objective of the study

The aim of the study is to provide objective data on autologous breast reconstruction to serve as basis of discussion for a potential revision of the current RIZIV-INAMI fee. Consequently, the study only focus on resources covered by the surgeon RIZIV-INAMI fee, i.e. what we called the “surgeon cost”. This means that resources covered by other financing sources (e.g. equipment, nurses, overhead, etc.) are not included. Results presented here therefore cannot be used to estimate the total cost of an autologous breast reconstruction technique.

The study is performed from the provider perspective and the evaluation of patients’ out-of-pocket payments is out of scope.

The full treatment episode is considered: the primary breast reconstruction (called hereafter the flap transfer) but also secondary interventions (e.g. symmetrization process, nipple reconstruction, and other adjustments). Short term re-interventions in case of complication (such as surgical site infections) are also presented as information in the scientific report. Long-term subsequent intervention episodes (e.g. because the reconstructed breast does not evolve in the same way as the natural breast) are out of scope for this study as the long term treatment trajectories may vary strongly from one patient to another.

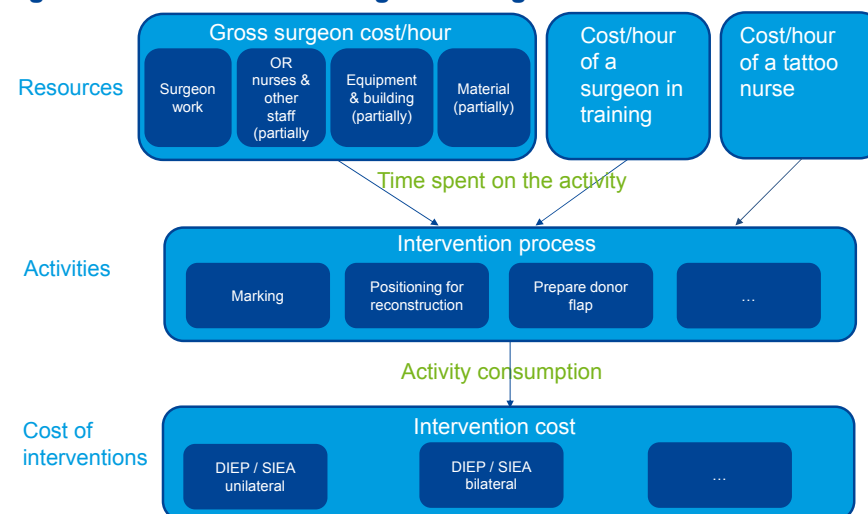
3.1.2. Time driven costing methodology

The current study followed the KCE “Manual for Cost-Based Pricing for Hospital Interventions”.³⁷ This manual provides input data concerning personnel costs as well as guidelines on how to perform cost calculations.

A time driven costing methodology was used, implying the following stages:

1. To define the list of treatment components, i.e. interventions performed in Belgium.
2. To define the list of activities composing the intervention process.
3. To define the resources used for these activities and the unit cost for these resources.
4. To define the cost drivers (in green in Figure 1) used to allocate the unit cost of each resource to the activities and then the activities to the interventions (see section 3.5).

Figure 1 – Time driven costing of autologous breast reconstructions





3.1.3. Selection of the surgeon teams and data collection and validation

Data were obtained from a sample of Belgian teams performing autologous breast reconstruction. Eleven teams applied to participate. To maintain a balance between the regions and between teams working in university and general hospitals, it was decided to drop one team operating in a Flemish university hospital. Among the 10 teams selected, 3 teams were pilot and participated actively in the definition of interventions performed in Belgium and of the activities composing these interventions. The list of participating teams can be found in Table 26 of the scientific report. Data were collected in all centres using pre-defined templates developed in collaboration with the pilot teams and were validated as described in section 4.9 of the scientific report.

3.2. Definition of interventions

At the beginning, all autologous breast reconstruction techniques were considered. Nevertheless, due to the absence of data in the timeframe of the data collection, some reconstruction techniques were then excluded (i.e. Free TRAM flap, Pedicled TRAM flap, and TAP flap). Moreover, because insufficient data were obtained for some other techniques, an aggregation of some techniques was performed for the presentation of results (e.g. uni-pedicled and bi-pedicled DIEP flap), without significant impact on results. The same rationale was followed for secondary interventions. The final list of (group of) flap transfer interventions and secondary interventions considered as well as the number of data obtained can be found in Table 2 and Table 3. Results for secondary interventions are presented separately.

Table 2 – List of “flap transfer” interventions

Techniques	Variants	#
DIEP / SIEA	Unilateral	103
	Bilateral	44
S-GAP/ I-GAP / PAP / TUG / LAP	Unilateral	12
LDF	Unilateral	9

Table 3 – List of secondary interventions and related side activities (markings & wound dressing)

Secondary intervention techniques	Variants	#
Markings (side activity)		110
Lipofilling	Unilateral	52
	Bilateral	17
Liposuction		37
Scar correction		26
Nipple reconstruction	Unilateral	36
	Bilateral	18
Prosthesis	Unilateral	7
	Bilateral	2
Reduction		15
Tattoo of the areola area		5
Wound dressing (side activity)		137

3.3. Definition of the list of activities related to the interventions

Activities considered concern all activities related to the interventions defined in the previous section, i.e.:

- the “flap transfer” intervention, and
- secondary interventions



3.3.1. Activities for the flap transfer

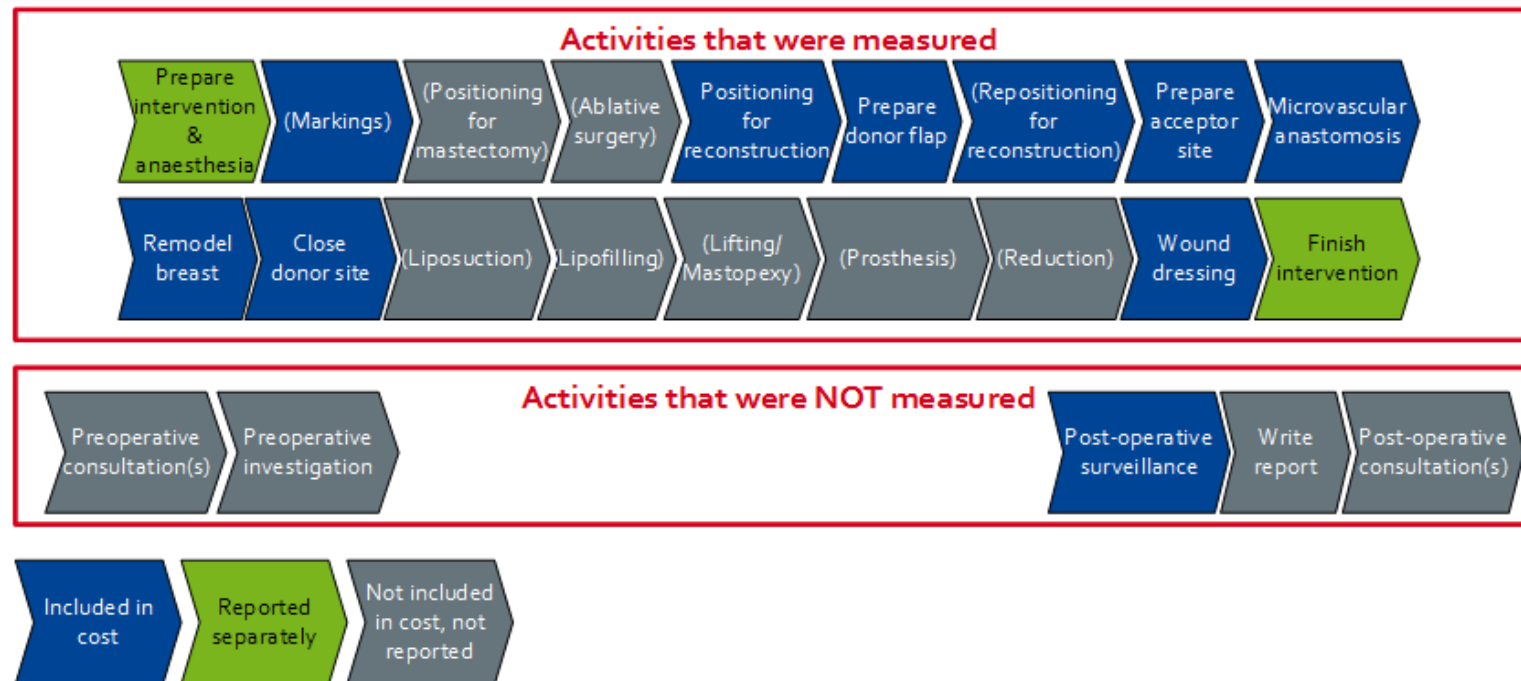
The list of activities for a reconstruction can be found in Figure 2. Because the objective of this report is to provide information allowing to readjust the current RIZIV-INAMI fee for the autologous breast reconstruction, only activities covered by this fee are taken into account.

The ablative surgery is therefore out of scope as this surgery is reimbursed by another RIZIV-INAMI fee. Pre- and post-operative activities (in grey in Figure 2) are also not included in the scope of the study as these activities have their own RIZIV-INAMI code, except post-operative surveillance for the

first 5 days after the intervention because it is supposed to be covered by the RIZIV-INAMI fee of the intervention.

The “prepare intervention and anaesthesia” and the “finish intervention” activities (in green in Figure 2) are usually performed in the absence of the surgeon. Therefore, they are also not included in the costs. However, according to some experts of this report, it is possible that in some cases, the plastic surgeon is present during the preparation and the finishing of the intervention. Thus, we decided to report time spent on those activities and the subsequent costs separately.

Figure 2 – Activities composing the flap transfer process



The brackets indicate that the activity was not performed during each intervention. These are optional activities that may or may not be performed. Immediate secondary interventions are in grey because only the costs of the flap transfer activities is considered here. The costs of secondary interventions are presented separately (see the next section).



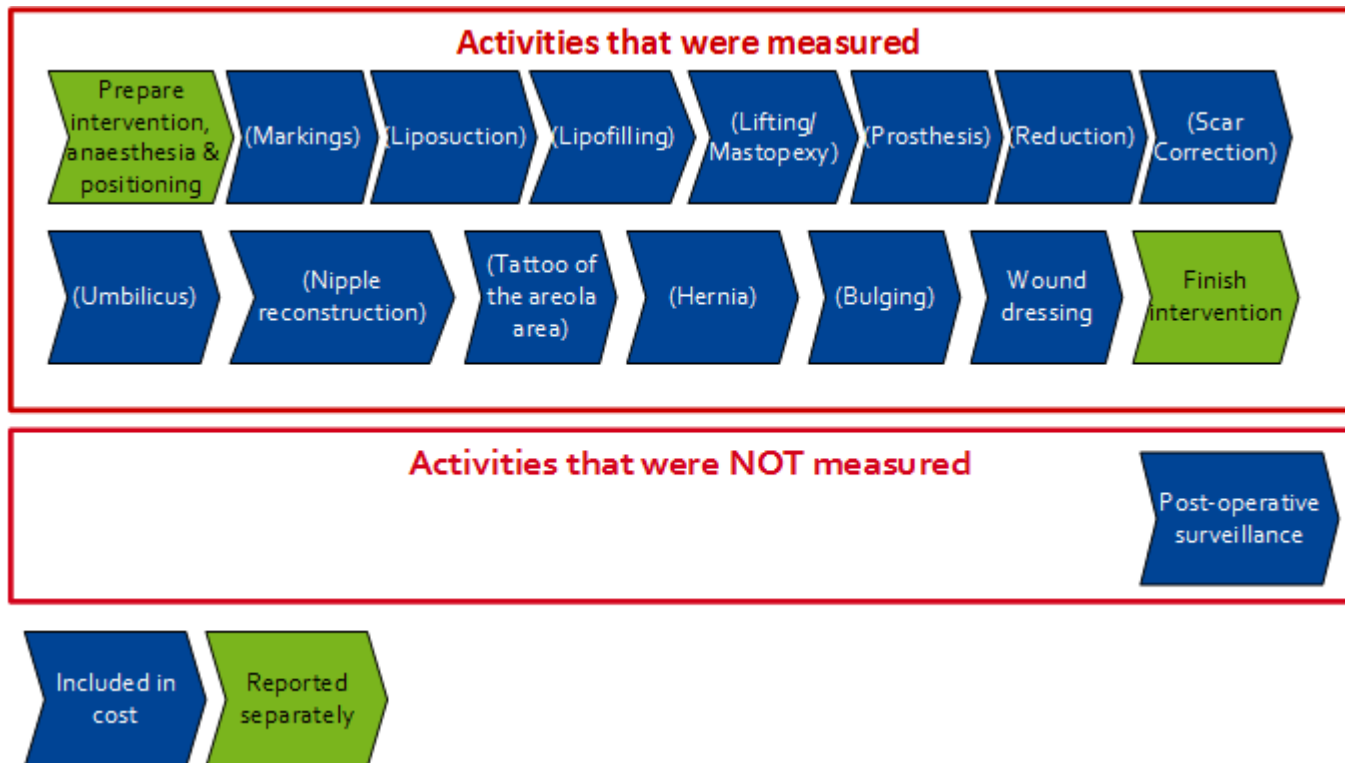
3.3.2. Secondary interventions

Immediate secondary interventions (i.e. adjustments performed at the same time of the breast reconstruction) have not been included in the results, due to a low number of valid measures. Only delayed secondary interventions are presented hereafter.

The process for these secondary interventions is presented in Figure 3. Note that some “side activities” have to be performed no matter how many adjustments are done. These “side activities” are comprised of: “Prepare intervention, anaesthesia and positioning”, “Markings”, “Wound dressing”, “Finish intervention” and “Post-operative surveillance”.

The order of this process can change, depending on the surgeon.

Figure 3 – Activities composing the delayed secondary interventions process





3.4. Considered resources

This section elaborates on the resources that were used to perform the activities listed in the previous section. As stated in the introduction, only the resources covered by the RIZIV-INAMI fees are taken into account. Resources covered by other hospital revenue sources (such as the hospital budget of financial means (BMF-BFM) or payments for pharmaceuticals) are not considered (see section 4.7 of the scientific report for more details).

In terms of human resources, activities listed in section 3.3 can imply the presence of surgeons (plastic surgeons or other surgeons), physicians in training,^b nurses or other staff. Because nurses or other staff are covered by the BMF-BFM, they are not taken into account in this analysis. The same rationale is followed for other resources covered by the BMF-BFM (i.e. OR building and equipment, material, overhead) and other revenue sources (e.g. pharmaceuticals).

However, as stipulated in the Hospital Act, physician fees have to cover the costs incurred by the performance of medical services that are not covered by the BMF-BFM (through a system of deductions). This means that a part of what should normally be covered by BMF-BFM is financed by the physician fee. What is exactly financed by these deductions is nevertheless a black box. To resolve this problem, the gross remuneration of the surgeon (i.e. before deduction of these contributions) was used to value the work of the surgeon (see section 4.5). All resources born by the physician were therefore indirectly taken into account in this analysis (but not measured).

Moreover, as stated above, nurses are not taken into account but an exception is done for the “tattoo nurse” as, for tattoos done within the hospital, the surgeon generally fully delegates the work to a tattoo nurse who performs the procedure in the outpatient setting. The work of the tattoo nurse is therefore not covered by the BFM-BMF and thus needs to be taken into account to estimate the cost of the tattoo.

In summary, resources taken into account in this study are the work of the surgeon and other resources born by the surgeon (see above), the work of the surgeon-in-training, and the work of the tattoo nurse.

3.5. Unit costs for each resource and cost drivers

3.5.1. Unit cost for the work done by plastic surgeons and other resources borne by plastic surgeons

The work of the plastic surgeons as well as other resources borne by the plastic surgeons (see section 3.4) are valued using a cost per hour and are allocated to activities and to interventions using the working time of the surgeon (see also section 3.5.5 for more details). Time measurements were thus done for each activity performed by the plastic surgeons. This was not possible for the surveillance performed by the plastic surgeon during the first five days following the intervention, which was therefore valued using the current usual RIZIV-INAMI fee for surveillance (i.e. code 598006, with a tariff of €12.16 per day) multiplied by 5 (i.e. €60.80).

Several scenarios

According to the KCE manual for cost study,³⁷ the cost of physician acts equals the opportunity cost of the time the physician spends on that act and is best reflected by the actual net remuneration of this physician (best proxy for the market value of this resource). Because it is not only the act of the surgeon that must be valued but also all resources born by the surgeon, the gross remuneration is used in this study (see also section 4.4).

Several scenarios were then considered to estimate the cost per hour:

- Scenario A is based on the gross remuneration of plastic surgeons excluding supplements, which is provided by the KCE manual for cost studies (see Box 2 **Error! Reference source not found.**).³⁷

^b In a limited number of cases, some medical students also actively participated in a part of the intervention. In such a case, his time was measured and valorized as a surgeon in training.



- Scenario B was added since plastic surgeons experience their remuneration as insufficient. It is based on the weighted average net remuneration of all medical specialists, to which the difference between the gross and net remuneration of plastic surgeons was added (to adjust for deductions and costs at charge of the plastic surgeon). This was also provided by the KCE manual for cost studies.³⁷
- Scenario C was added based on the current reimbursement of reconstructions with breast implant (“prosthesis opportunity cost”). It tries to answer the following question: what would the remuneration of a plastic surgeon be if (s)he spends his/her time on prosthesis breast reconstructions instead of autologous breast reconstructions. Estimation was based on the RIZIV-INAMI fee divided by the average duration of prosthesis reconstruction interventions extracted from operating room data of 3 participating centres. This hourly cost is therefore only based on 14 interventions, which limits the accuracy of the estimation.

The yearly gross remuneration

As stated above, scenarios A and B are based on the 2010 yearly gross remuneration of medical specialists provided by the KCE manual for cost studies³⁷. This gross remuneration is calculated per medical speciality, based on the average yearly remuneration of medical specialists for all activities that are billable to the RIZIV-INAMI^c before deductions and subtraction of other costs at charge of the medical specialist, and with exclusion of supplements (see section 4.8.1 of the scientific report for more details). This 2010 gross remuneration was then indexed to 2013 (latest year available for RIZIV-INAMI data) as detailed in section 4.8.1 of the scientific report.

Conversion of the yearly gross remuneration in a cost per hour

The manual for cost studies also provide an estimation of these gross remuneration per half days (based on the estimation that a full-time-equivalent (FTE) works 11 half-days per week and 482 half days per year).

Based on this, the cost per hour can then be estimated by determining the number of hours physicians usually work per half day. Nevertheless, because the gross remuneration was only based on RIZIV-INAMI billable activities (i.e. consultations and interventions but not administrative work, etc.), it is the number of “RIZIV-INAMI billable” hours per half day that must be estimated, not the total number of hours worked per half day. Because no official data are available on this subject, estimations were based on a questionnaire filled out by the participating centres (see Table 34 of the scientific report for more details), giving an average number of billable hours per half day of 3h21 and a minimum number of billable hours per half day of 1h49. It should be noted that these values were also used for the scenario B while it can easily be expected that the number of RIZIV-INAMI hours for other medical specialists would differ (e.g. no esthetical activities). This scenario B is therefore purely hypothetical and does not really represent an average cost per hour for all medical specialists. Cost per hours obtained for each scenario are summarized in Table 4.

^c so also including consultations

**Table 4 – Cost per hour for the three scenarios**

Scenario A		Scenario B		Scenario C
Based on the yearly gross remuneration of a plastic surgeon, excluding supplements		Based on the average yearly gross remuneration of all medical specialists, excluding supplement		Based on the prosthesis opportunity cost
Average*	Upper bound**	Average*	Upper bound**	-
€133	€246	€163	€300	€28

More details on these calculations can be found in Table 35 of the scientific report
 *Average cost per hour based on the estimation that plastic surgeon works on average 3 hours 21 for billable activities per half day; ** Upper bound cost per hour based on the estimation that plastic surgeon works a minimum of 1 hour 49 for billable activities per half day.

3.5.2. The work of the surgeons-in-training

In order to estimate the cost of the surgeon in training, we used the minimum legal salary (€ 20 500* 1.6084 (index)), increased by a factor to take into account the employer costs on top of the gross wage (35.4% based on the KCE manual for cost studies)³⁷. With a maximum legal work time of 48 hours per week and the number of productive days (i.e. 241), the cost per hour is estimated to €21.23 (see Table 36 of the scientific report for details). It should also be noted that in some teams, students^d were also active for some activities during an intervention. In these (rare) cases, they were valued as surgeons-in-training.

^d Students concerns people who have not yet received their physician diploma (obtained after Medical studies of six years). Surgeon-in-training concerns

3.5.3. The work of the tattoo nurse

Based on the KCE manual for cost studies, the cost per hour of a tattoo nurse was estimated to be € 40.96.

3.5.4. The work of other medical profiles

In addition to plastic surgeons, surgeons-in-training and tattoo nurses, from time to time a gynaecologist also participated to the intervention. In these (rare) cases, the hourly cost of the gynaecologist was calculated in the same manner as in section 3.5.1, leading to an average cost per hour to € 133.90 and the upper bound amounts to € 246.72 (see the scientific report for more details).

3.5.5. Cost drivers

After having identified all resources and unit costs, the last step consisted of allocating the unit cost of each resource to the activities and then the activities to the interventions.

- First, the resource costs were allocated to each activity. This was done by multiplying the resource cost per hour (see sections 3.5.1 to 3.5.4) by the duration of the activity, for each activity performed by a surgeon, a physician in training or a tattoo nurse. This gives us a cost per activity.
- The costs of the individual activities was then summed to obtain the cost of a complete intervention. In this step it was important to know which activities were performed for which type of treatment, as registered by the teams (see box 3 of the scientific report for more details).

3.5.6. Presentation of results

Results presented in this synthesis are the number of **man-hours** per main profile (plastic surgeon and surgeon-in-training) and the costs of the flap transfer techniques and of secondary interventions.

Following sub-section explains these important concepts in detail.

people in specialization, after having receive the physician diploma (6 years medical studies).



Man-hours per profile

The man-hours per profile correspond to the time spent by each medical personnel presents on in scope activities, summed by profile (see also Box 3 of the scientific report). To summarize the results, only man-hours of plastic surgeons and man-hours of surgeons-in training are shown in underlying tables. Other profiles (gynaecologists) only very rarely participate to the intervention. Their work is included in the cost calculations but their average number of man-hours per intervention is too low to be presented in the underlying tables.

Cost of the flap transfer and of secondary interventions

To calculate the costs of flap transfer interventions and secondary interventions, man-hours per profile are used instead of the intervention duration. It is therefore important to note that out of scope activities such as ablative surgery activities or immediate secondary interventions are not included in the cost of flap transfer techniques. Cost data were based on man-hours per profile instead of on the intervention duration for the following reasons:

- During a reconstruction, the team working on the reconstruction activities can change (e.g. it is possible to switch from one surgeon to two surgeons for specific parts of the intervention).
- Several activities in scope might be performed in parallel.
- Out-of scope activities must not be taken into account.

3.6. Results

3.6.1.1. Flap transfer techniques

DIEP / SIEA is the most commonly encountered technique. DIEP / SIEA and S-GAP/I-GAP/PAP/TUG/LAP interventions employ more man-hours than for LDF reconstructions. Moreover, bilateral DIEP / SIEA interventions takes approximately 50% more man-hours than a unilateral reconstruction (see Table 5). Nevertheless this study only includes 9 LDF reconstructions and 12 S-GAP/I-GAP/PAP/TUG/LAP reconstructions and the S-GAP/I-GAP/PAP/TUG/LAP is composed of techniques with a high degree of heterogeneity on intervention duration. Therefore, results for these techniques must be used with cautions.

In the scientific report, a more detailed description of unilateral DIEP/SIEA reconstruction can also be found, presenting a.o. the spread in duration and man-hours between teams. Because the aim of this report is not to compare results between hospitals but rather to use average data, these details are not presented in this synthesis.

Figure 4 shows the cost results of unilateral DIEP/SIEA (based on 103 registrations) and bilateral DIEP/SIEA (based on 44 registrations) interventions.

Note that the costs that are calculated on the basis of the average number of billable hours per half day (illustrated by the lower bars in darker colours) do not exceed the current RIZIV-INAMI fee for unilateral and bilateral DIEP/SIEA reconstructions. All other scenarios, including scenario C, show a cost that exceeds the current RIZIV-INAMI fee by +30% to +70%, depending on the considered scenario.



Table 5 – Number of registrations per technique and man-hours spent on in-scope activities by profile (i.e. excluding activities related to ablation and immediate secondary interventions)

	DIEP / SIEA		LDF	S-GAP / I-GAP / PAP / TUG / LAP
	Unilateral	Bilateral	Unilateral	Unilateral
# of observations	103	44	9	12
Reconstruction man-hours of plastic surgeon	7:18	10:10	4:03	7:54
Reconstruction man-hours of surgeon in training	4:14	6:44	3:40	8:01

Figure 4 – Average “surgeon cost” of unilateral and bilateral DIEP/SIEA interventions

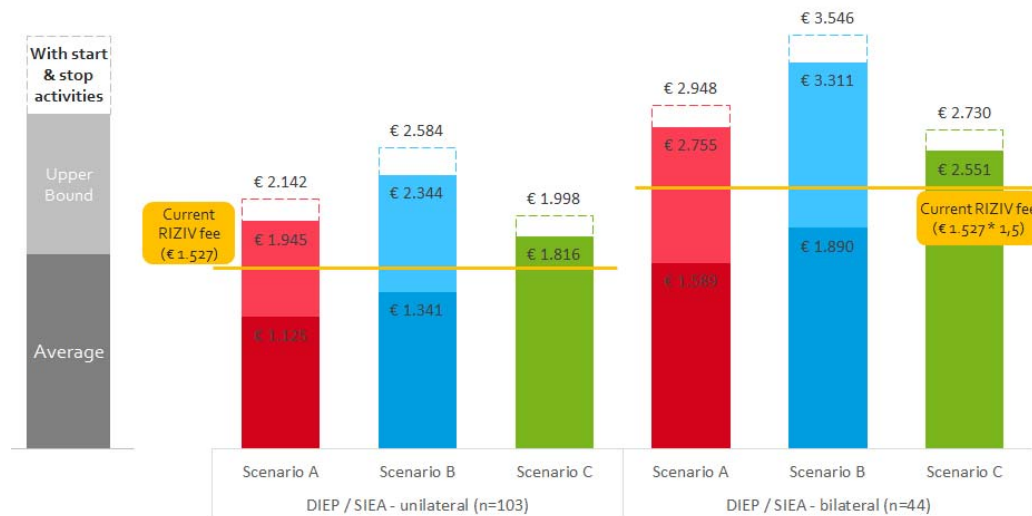


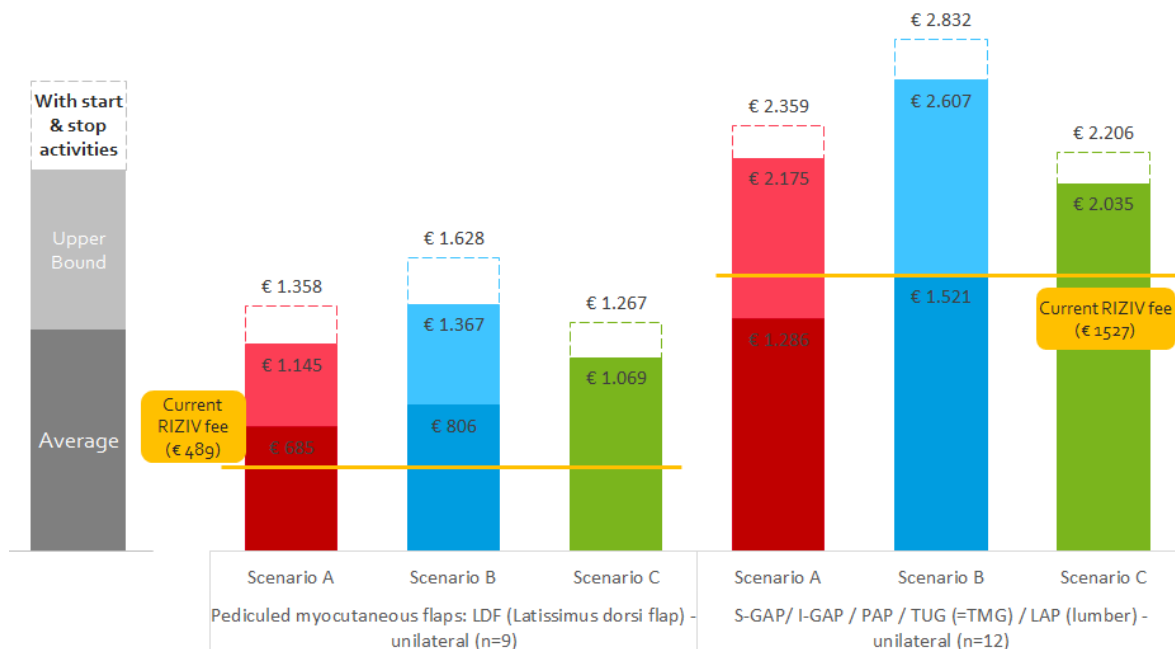


Figure 5 shows the cost results of unilateral LDF reconstructions and of unilateral S-GAP/I-GAP/PAP/TUG/LAP reconstructions. The number of registrations for these techniques is more limited than for the unilateral and bilateral DIEP/SIEA reconstructions, as these techniques are less common. Therefore, these results must be considered with caution.

For the unilateral LDF reconstruction, all cost scenarios result in a higher cost than the current RIZIV-INAMI fee, ranging from a 40% higher cost (in the case of scenario A calculated with the average number of hours per half day) up to a cost that is 230% higher than the current RIZIV-INAMI fee (in the case of scenario B calculated with the minimum number of hours per half day and including the start and stop activities).

Although they are somewhat higher, the results for the unilateral S-GAP/I-GAP/PAP/TUG/LAP reconstructions are similar to the results of the unilateral DIEP/SIEA reconstructions: the costs calculated on the basis of the average number of billable hours per half day (illustrated by the lower bars in darker colours) do not exceed the current RIZIV-INAMI fee. All other scenarios however, including scenario C, show a cost that exceeds the current RIZIV-INAMI fee by +30% to +85%, depending on the considered scenario.

Figure 5 – Average “surgeon cost” of unilateral LDF and S-GAP/I-GAP/PAP/TUG/LAP interventions





Delayed secondary interventions

Table 6 presents the composition of the medical team in terms of man-hours for the most common secondary intervention techniques, that is, for those techniques for which a minimum number of registrations are available.

Despite a high global number of measures, for many secondary intervention techniques, the number of registrations is very limited. This is due to the high diversity in techniques. Furthermore, there is a high variation in measures (see Table 7). For both these reasons, the results for secondary intervention techniques should be used with caution. Cost results of secondary interventions including side activities (“Markings”, “Wound dressing”, “Start & Stop activities”) are showed in Table 7.

Table 6 – Number of secondary interventions registrations by type of activity and man-hours by profile

	Markings	Lipofilling		Lipo-suction	Nipple reconstruction		Prosthesis		Reduction	Tattoo of the areola area	Scar correction	Wound dressing
		Unilateral	Bilateral		Unilateral	Bilateral	Unilateral	Bilateral				
# of observations	110	52	17	37	36	18	7	2	15	5	26	137
Man-hours of plastic surgeons	0:09	0:45	0:35	0:28	0:27	0:42	0:34	1:57	0:58	0:07	0:18	0:03
Man-hours of surgeons in training	0:06	0:30	0:47	0:25	0:17	0:50	0:13	3:06	0:45	0:00	0:22	0:03



3.7. Summary of main figures and handling of uncertainty

Results presented in the previous section mainly depend on the cost per hour and the number of man hours:

- For the cost per hour, no objective data was available and a number of methodological choices were done. Uncertainty around these methodological choices was handled using scenario analyses.
- Concerning the man-hours, because the cost is obtained by multiplying the number of man-hours per the cost per hour, variations in the total number of man-hours will impact linearly the cost of interventions.

To give an idea of variations around cost-estimates, Table 7 summarizes the average cost obtained +/- the standard deviation (sd) for each scenario. Median and interquartile range (IQR) can also be found in Table 41 of the scientific report.

Important variations in cost results were found. Several reasons were identified that could explain that variability:

- Surgeon: The experience and skills of the surgeon and the level of quality desired by the surgeon could have an impact.
- Team: The size, the experience and the skills of the team performing the intervention could also be determining. For example, some surgeons have extensively trained their operating room nurse for more efficient interventions, not needing a second surgeon.
- Material: The use of specific material can also increase or decrease the time of certain activities during the intervention.
- Patient: The size/weight/etc. of the patient could also be an explanation.



Table 7 – Average cost of each technique (+/- standard deviation) for each scenario

	Current RIZIV-INAMI Fee	Scenario A (Based on the gross remuneration of plastic surgeon)				Scenario B (Based on the average net remuneration of medical specialists + the difference between the net and the gross remuneration of plastic surgeon)				Scenario C Prosthesis opportunity cost	
		Average (based on the average number of billable hour per half day)		Upper bound (based on the min. number of billable hour per half day)		Average (based on the average number of billable hour per half day)		Upper bound (based on the min. number of billable hour per half day)		-	
		Without start and stop activities	With start and stop activities	Without start and stop activities	With start and stop activities	Without start and stop activities	With start and stop activities	Without start and stop activities	With start and stop activities	Without start and stop activities	With start and stop activities
Flap transfer techniques											
DIEP/SIEA unilateral (n= 103)	€1527	€1125 σ=€356	€1231 σ=€356	€1945 σ=€646	€2142 σ=€646	€1341 σ=€432	€1472 σ=€432	€2344 σ=€789	€2584 σ=€789	€1816 σ=€600	€1998 σ=€600
DIEP/SIEA bilateral (n= 44)	€2291	€1589 σ=€595	€1693 σ=€595	€2755 σ=€1100	€2948 σ=€1100	€1890 σ=€724	€2018 σ=€724	€3311 σ=€1340	€3546 σ=€1340	€2551 σ=€1011	€2730 σ=€1011
LDF unilateral (n= 9)	€489	€685 σ=€271	€801 σ=€271	€1145 σ=€441	€1358 σ=€441	€806 σ=€314	€947 σ=€314	€1367 σ=€521	€1628 σ=€521	€1069 σ=€409	€1267 σ=€409
S-GAP/I-GAP/PAP/TUG/LAP unilateral (n= 12)	€1527	€1286 σ=€499	€1386 σ=€499	€2175 σ=€911	€2359 σ=€911	€1521 σ=€606	€1643 σ=€606	€2607 σ=€1114	€2832 σ=€1114	€2035 σ=€845	€2206 σ=€845



	Current RIZIV-INAMI Fee	Scenario A (Based on the gross remuneration of plastic surgeon)				Scenario B (Based on the average net remuneration of medical specialists + the difference between the net and the gross remuneration of plastic surgeon)				Scenario C Prosthesis opportunity cost	
		Average (based on the average number of billable hour per half day)		Upper bound (based on the min. number of billable hour per half day)		Average (based on the average number of billable hour per half day)		Upper bound (based on the min. number of billable hour per half day)		-	
		Without start and stop activities	With start and stop activities	Without start and stop activities	With start and stop activities	Without start and stop activities	With start and stop activities	Without start and stop activities	With start and stop activities	Without start and stop activities	With start and stop activities
Secondary intervention											
Lipofilling - unilateral (n=52)	€0	€160 σ =€68	€189 σ =€68	€258 σ =€123	€311 σ =€123	€186 σ =€83	€222 σ =€83	€305 σ =€150	€371 σ =€150	€242 σ =€115	€292 σ =€115
Lipofilling - bilateral (n=17)	€0	€144 σ =€75	€173 σ =€75	€222 σ =€139	€276 σ =€139	€165 σ =€91	€200 σ =€91	€261 σ =€170	€326 σ =€170	€210 σ =€129	€260 σ =€129
Liposuction (n=37)	€0	€121 σ =€82	€150 σ =€82	€187 σ =€142	€241 σ =€142	€139 σ =€98	€174 σ =€98	€220 σ =€172	€285 σ =€172	€177 σ =€133	€227 σ =€133
Nipple reconstruction - unilateral (n=36)	€147	€116 σ =€43	€145 σ =€43	€180 σ =€77	€233 σ =€77	€133 σ =€52	€168 σ =€52	€211 σ =€94	€276 σ =€94	€170 σ =€72	€219 σ =€72
Nipple reconstruction - bilateral (n=18)	€221	€161 σ =€73	€190 σ =€73	€254 σ =€128	€307 σ =€128	€186 σ =€87	€221 σ =€87	€298 σ =€155	€364 σ =€155	€239 σ =€119	€289 σ =€119
prosthesis - unilateral (n=7)	€0	€130 σ =€30	€159 σ =€30	€207 σ =€49	€260 σ =€49	€150 σ =€35	€186 σ =€35	€244 σ =€59	€309 σ =€59	€195 σ =€46	€244 σ =€46
prosthesis - bilateral (n=2)	€0	€375 σ =€81	€404 σ =€81	€606 σ =€122	€660 σ =€122	€436 σ =€92	€471 σ =€92	€718 σ =€142	€784 σ =€142	€569 σ =€116	€619 σ =€116
Reduction - unilateral (n=15)	€0	€195 σ =€65	€224 σ =€65	€318 σ =€115	€371 σ =€115	€228 σ =€78	€263 σ =€78	€377 σ =€140	€443 σ =€140	€298 σ =€107	€348 σ =€107
Tattoo of the areola area (n=5)	€49	€95 σ =€31	€124 σ =€31	€120 σ =€56	€174 σ =€56	€101 σ =€37	€137 σ =€37	€132 σ =€68	€198 σ =€68	€116 σ =€52	€166 σ =€52
Scar correction (n=26)	€0 (usually)	€97 σ =€25	€126 σ =€25	€144 σ =€46	€197 σ =€46	€109 σ =€30	€145 σ =€30	€166 σ =€58	€232 σ =€58	€136 σ =€43	€186 σ =€43



4. DISCUSSION AND CONCLUSION

The main objective of this study was to provide objective data to serve as a basis of discussion for a possible re-evaluation of the RIZIV-INAMI fee for autologous breast reconstruction with flap. Even if this study has a lot of limitations implying that results must be used with cautions, this study allows us to identify important points of attention for policy makers:

Important variations in the remuneration of medical specialists and the need for a base cost per hour

Variations in the cost per hour obtained in the different scenarios reflect the differences in remunerations between medical specialists (with an average cost per hour of € 131.63 for plastic surgeons and an average cost per hour of € 160.90 for all medical specialists confounded) and within the same specialty (an average cost per hour of € 131.63 for all activities performed by a plastic surgeon and of € 228.02 for a reconstruction with a prosthesis). This difference would yet be higher if we had taken into account a cost per hour only based on the remuneration of other medical specialists known as being high. A previous KCE report has already highlighted the important variations in the remuneration of medical specialists, obviously not linked to a corresponding tenfold in workload, risk or expertise.³⁷ An agreement on what is a reasonable cost per hour for a base intervention is needed, that can then be adjusted according to other characteristics such as additional stress and expertise (see also below).

A global re-evaluation of the remuneration of all medical specialists is required, based on additional factors than only time

Although initially fees for surgery were based on rude estimates of time and complexity of interventions compared to a number of base interventions (appendectomy e.g. served as base intervention for abdominal surgery fees), the link between the tariff and objective criteria such as time and complexity blurred over time. Some fee (re)negotiations but also the lack of adaptation of some other fees (e.g. when the complexity / time of an intervention was reduced because of technological progress) have led to unjustifiable imbalances in remuneration between different medical specialists. In a recent KCE report proposing a framework for an improved hospital payment system (KCE report 229), a re-evaluation of the

remuneration of medical specialists was put forward as one of the pillars of the recommended reform.³⁸

Imbalances should be redressed not only by taking into account the time spent by the medical specialist (as done in this study) but also by using a number of factors such as the level of required expertise and experience, risks (including litigation risk) and stress, required intellectual effort, physical effort and discomfort. The resource-based relative value scale, developed by Hsiao³⁹ and used by Medicare in the U.S. is an example of a relative fee-setting model, where the physician work component is based on the physician's time, mental effort, technical skill, judgment, stress and training. Official tariffs were also reviewed in France where a common classification of medical procedures ('classification commune des actes médicaux', CCAM) for technical procedures was established based on this model.⁴⁰ Such a fee-setting process nevertheless requires a valuation of activities relative to the value of other activities across all medical specialists, to ensure coherency and to allow estimating and controlling the impact on aggregate expenditures. It encompasses a simultaneous approach and cannot be done separately and consecutively for different medical specialists, and certainly not for one single activity within one specialty.

The currently presented cost analysis on autologous breast reconstruction therefore does not provide a solid answer to the question of what can be considered a fair remuneration, i.e. based on objective criteria. It could only be used for a temporary fee revision, awaiting a more global re-evaluation across but also within medical specialties.

Toward a professional fee without current deductions

In its framework for reform, the KCE furthermore proposes to abandon the system of deductions and to move towards a system where fees only cover the physician's cognitive and physical labour and related risks. The presented analysis on breast reconstruction still follows the lines of the current fee-for-service system, along the general principle that fees are meant to cover more than just the physician's cognitive and intellectual labour. They are also meant to cover the costs incurred by the performance of medical services that are not covered by the hospital budget. Details on such contributions are not regulated by law and agreements between physicians and hospitals on the costs to be covered vary widely. This posed a difficulty to calculate the real cost to be covered by the RIZIV-INAMI fees.



In order to circumvent this problem, current gross remuneration data were used, i.e. remuneration of plastic surgeons before making any subtractions either for deductions to the hospital, or for direct expenses made by the plastic surgeon e.g. for an instrumentalist at own charge. This allowed us to focus efforts on time measurements, which should anyhow be one of the important building blocks for any future – global - fee re-evaluation.

Beyond a simple re-evaluation of specialists' remuneration tariffs: A global revision of the nomenclature...

Besides the tariffs, a global revision of the structure of the nomenclature was also highlighted, e.g. a revision of the descriptions as well as of the number of codes (removal or adding of specific codes). There is currently almost 9000 different codes and in many domains the list is for example considered too detailed by stakeholders interviewed in the KCE report 229 (proposing a framework for an improved hospital payment system). The current study also shows that some specific rules / mechanisms should be revised. For example, fees for anaesthesia are currently linked to the remuneration of the surgeon fee (% of the surgeon fee). Thus, by increasing the remuneration of plastic surgeons, the remuneration for anaesthesia will also increase, without change in the level of complexity of anaesthesia.

It should nevertheless be noted that the identification of problems linked to the current nomenclature was out of scope of this report. The aim of this discussion is not to provide an exhaustive list of problems linked to the current nomenclature but rather to insist on the need for a global revision through examples.

...and an extension of the hospital budget, more based on actual resources consumptions

The current study only focus on the “surgeon cost” to re-evaluate his/her remuneration. Nevertheless, the KCE report 229 also underline a chronic issue of underpayment for the Budget of Financial Means (BFM). The so-called BFM is less and less sufficient to pay for nursing and other (non-medical) care personnel or general expenses. The framework for reform in the KCE report 229 therefore also propose to extend the existing DRG-based payment per admission, and to determine the DRG tariffs much more on the basis of actual costs than is the case today, requiring the collection of average costs derived from a sample of hospitals. This mean that in the

future, an enlargement of this study to a total cost based on all resources will be needed.

The question of aesthetic adjustments

The RIZIV-INAMI fee is expected to cover the full reconstruction process including adjustments. Aesthetic interventions are not reimbursed but in the case of breast reconstruction after mastectomy, the borderline between aesthetic and not aesthetic adjustments is situated in a twilight zone. In order to avoid to determine by ourselves which adjustments must be taken into account to determine the total fee for an autologous breast reconstruction intervention, the costs of secondary interventions are presented separately from the cost of the flap transfer.

Not a classical HTA

Finally, it should be noted that the aim of this study was not to analyze the effectiveness and cost-effectiveness of autologous breast reconstruction interventions compared to alternatives as it is usually done in classical health technology assessments (HTA). The clinical part on the effectiveness and safety of these procedures compared to alternatives as well as the description of the current practice in Belgium (including some cost data) were rather presented to set the frame of the medical context around autologous breast reconstruction.

As stated above, the scope of this report was not to put in question the reimbursement decision of autologous breast reconstruction techniques but rather to provide objective data for potential re-evaluations of the current reimbursement tariffs. This is also why the cost study was limited to the “surgeon cost” for the initial breast reconstruction episode, also without taking into account long-term complications.

**In conclusion**

Important variations were found in the results, also depending of methodological choices. For unilateral DIEP interventions, results ranged from € 1125 (below the current RIZIV-INAMI fee of € 1527) to € 2344 depending on the scenario. This amount further increases when taking into account start and stop activities (up to € 2584) or by adding secondary interventions (i.e. immediate or delayed adjustments). Due to the long list of limitations described above, the current analysis must be used with caution and can only serve for a temporary revision of the fees for autologous breast reconstruction, awaiting a more global re-evaluation across and within medical specialties. The big challenge in the future will be to define what would be a fair and reasonable base hourly income for a physician.



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COLOPHON

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- Acknowledgements:**
We would like to thank all participating teams of the following hospitals: UZ Leuven, UZ Gent, CHU de Liège, CHU Saint-Pierre, AZ Delta Roeselare-Menen, CHC Liège, Clinique Edith Cavell (Chirec), AZ Klina Brasschaat, Cliniques et Maternités Saint-Elisabeth Namur, AZ St-Jan Brugge-Oostende, Jan Yperman Ziekenhuis, AZ Augustinus Veurne.
We would like to thank Carine Van de Voorde (KCE) and Koen Van den Heede (KCE) for their contribution in the discussion.
We would like to thank Stephan Devriese (KCE) for his contribution to the data analysis.
We would like to thank Nicolas Fairon (KCE) for his contribution to the review of the literature.
- Other reported interests:** The following people participated as plastic surgeons: Phillip Blondeel (UZ Gent), Bob De Frene (AZ St-Jan Brugge-Oostende AV, Jan Yperman Ziekenhuis, AZ Sint-Augustinus Veurne), Rika Deraemaeker (UMC Sint-Pieter), Bahram Dezfoulian (CHU de Liège), Gerd Fabre (UZ Leuven campus Gasthuisberg), Philippe Fosseprez (Clinique et Maternité Sainte-Elisabeth Namur), Xavier Nelissen (CHC), Jean-Luc Nizet (CHU Liège), Wouter Peeters (AZ Klina), Marc Vandevort (AZ Delta), Jean Van Geertruyden (Clinique Edith Cavell).



Marie-Rose Christiaens (head of the oncological surgery department and coordinator of the 'borstcentrum' of UZ Leuven) participated as medical specialist in oncological surgery.

Membership of a stakeholder group on which the results of this report could have an impact.: Ward Rommel (Kom op tegen Kanker)

Payments to speak, training remuneration, subsidised travel or payment for participation at a conference: Marc Vandevooort (has given conferences for the company 'Mentor')

Presidency or accountable function within an institution, association, department or other entity on which the results of this report could have an impact: Phillip Blondeel (president 'Beautiful After Breast Cancer'), Frans Missotten (president Belgische Vereniging voor Plastische Heelkunde RBSPS-VBS/GBS), Olivier Ferrali (leading position in a hospital association)

Participation in scientific or experimental research as an initiator, principal investigator or researcher: Magali Pirson (PACHA study)

Layout:

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Publication date:

08 December 2015

Domain:

Health Technology Assessment (HTA)

MeSH:

Costs and Cost Analysis; Hospital Costs; Operative Time; Reimbursement Mechanisms; Surgical Flaps; Mammoplasty

NLM Classification:

W74

Language:

English



Format: Adobe® PDF™ (A4)

Legal depot: D/2015/10.273/76

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How to refer to this document?

Gerkens S, Van De Sande S, Leroy R, Mertens A-S, Schreiber J, Van Halewyck D, Bellaert J, Van Brabandt H, Swartenbroekx N, Obyn C. Autologous breast reconstruction techniques after mammary resection: time measurements for a potential re-evaluation of the surgeon fee – Synthesis. Health Technology Assessment (HTA) Brussels: Belgian Health Care Knowledge Centre (KCE). 2015. KCE Reports 251Cs. D/2015/10.273/76.

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