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ProgrammE in Costing, resource use measurement and outcome valuation for Use in multi-sectoral National and International health economic evaluAtions

Deliverable D4.4

Standardised costing template for selected costing approaches: patient, family and informal care

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P3-CUB

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Abbreviations

CUB	Budapesti Corvinus Egyetem
D	Deliverable
DESDE-LTC	Description and evaluation of services and directories in Europe – long term care
EUR	Erasmus Universiteit Rotterdam
HA	Horizontal Activity
M	Month
MUW	Medical University of Vienna
O	Objective
P	Partner
PECUNIA	ProgrammE in Costing, resource use measurement and outcome valuation for Use in multi-sectoral National and International health economic evaluAtions
Psicost	Asociacion Cientifica Psicost
PPP	Purchasing Power Parity
RUM	Resource Use Measurement
SESCS	Servicio Canario de la Salud
TC	Telephone Conference
UC	Unit Cost
UKE	Universitätsklinikum Hamburg-Eppendorf
UM	Universiteit Maastricht
UnivBris	University of Bristol
WP	Work Package

1 Introduction

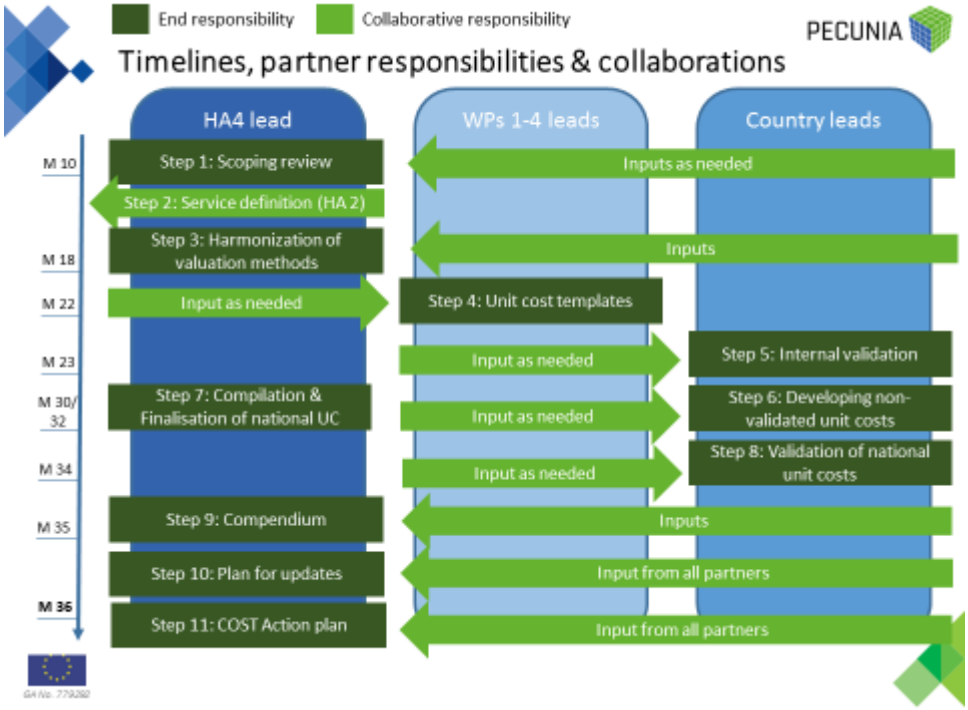
Due to currently lacking internationally comparable measurement and valuation methods of resource use in the patient and family sector for mental disorders, WP4 focuses on the development of these methods. The first aim of WP4 was to establish harmonised descriptions for the six participating PECUNIA countries (Austria, Germany, Hungary, the Netherlands, Spain and United Kingdom) for mental disorders (O4.1) as part of the Horizontal Activities (HAs) 1 and 2 (HA1: Identification, HA2: Definition). Further, a standardized patient and family domain instrument module for multi-sectoral service and resource-use measurement (RUM) was created ensuring cross-country comparability and transferability (O4.2) as part of HA3 (Measurement). In line with the final objective of WP4 (O4.3), based on the identified resource-use items and their descriptions and compatible with the developed RUM instrument, a standardized WP4 costing template for the valuation of resource use in the patient and family domain was developed (O4.3) by P3-CUB and P8-LSE as part of HA4 (Valuation), corresponding to deliverable D4.4. In year 3, this WP4 template will be applied in the PECUNIA countries to develop country-specific unit costs.

This Deliverable D4.4 presents the activities and results related to O4.3, i.e. the development of unit cost template(s) for the patient and family sector by P3-CUB and P8-LSE. **Note that in agreement with the European Commission, all materials that may violate copyrights and impair publication options were taken out of this public deliverable report.**

2 Description of Activities

Based on input from the findings of the scoping review on costing methods conducted in year 1 (M10; by MUW), the harmonization strategy 'valuation' (HA4) developed for WPs1-4 in year 2 (M18; by MUW) following the PECUNIA care atom (by P1-MUW and P7-Psicost), joint TCs with the HA4 leads [29-10-2019: finalizing draft template; 28-11-2019: modification of costing template based on feedback from country leads] and related email correspondences, a unit costing template for costing informal care was designed (D4.4) by P3-CUB and P8-LSE. Based on the PECUNIA care atom, all WPs1-4 developed templates that reflect the most common/specific resource categories within the given sector. For WP4, since resources with a given monetary value do not need additional unit costs, the unit cost template only focusses on the valuation of informal care (See **Section 2.1**). In line with the steps outlined in the HA4 strategy applicable to WPs1-4 (**Figure 1**), the following activities (**Sections 2.1 and 2.2**) in the WP4 unit cost template development were part of the WP4 activities in year 2 of PECUNIA.

Figure 1: HA4 timelines, partner responsibilities and collaborations



Source: Own compilation by P1-MUW (HA4 lead) (cf. PECUNIA concept paper, D7.1). Note: UC = unit cost.

2.1 WP4 costing template development (until October 2019; CUB, LSE, HA4; M22)

The lists of items identified and prioritized within HA1 (by P2-UKE) were used as the basis for the development of the WP4 costing template. The **WP4 resource list** developed until M18 (see D4.2, lead: P3-CUB) through literature search and expert review is heterogeneous and includes services, activities and goods. Items can be categorized either as volunteer care or market services paid directly by the patients. Items purchased directly by the patient or patient's family from a provider who are not part of the health sector have explicit monetary value represented by their market prices. It is not necessary to include these items in a unit cost calculation template, rather the patients should be asked directly about their out-of-packet expenses. Therefore, the development of the WP4 (by P3-CUB and P8-LSE) costing templates between July and October 2019 focuses on the valuation of volunteer time.

Informal care is understood to be a voluntary service usually provided by someone close to the care recipient. By definition, the giver of such care is not paid for this service. It is a dynamic process which heavily depends on the care demands of the person being cared for, reliant on the individual's health status (van den Berg et al. 2005). Berg et al. define informal care as "a quasi-market composite commodity consisting of heterogeneous parts produced (paid or unpaid) by one or more members of the social environment of the care recipient as a result of the care demands of the care recipient". Based on this definition, it is possible to look at informal care as a commodity that is produced. Once one looks at it as commodity, the service can be valued.

The valuation of a caregiver's time is not clear-cut from a methodological perspective, but several questions need to be considered before settling on the appropriate valuation method. Did the care giver have a paid job that he or she had to give up to care for his or her loved one? What type of care is provided? According to Koopmanschap et al. (2008), different valuation methods require different levels of information, which means that the information one has about their variable of interest will determine the type of valuation method that he decides on: 1. The proxy good method; 2. The opportunity cost method; 3. The contingent valuation method; 4. The conjoint measurement method 5. Measurement of health effects, in terms of health-related quality of life; 6. Measurement of well-being.

The **PECUNIA resource use measurement (RUM) questionnaire** section covering the patient and family domain **(D4.3; lead: P4-CUB)** will be filled out by the patients; the caregiver will be not asked directly. However, some valuation methods require exact information from the caregiver. For example, to apply the opportunity cost method it is necessary to know the time missing from paid work. Other methods such as the contingent valuation method, the conjoint analysis and the well-being method require conducting a valuation study based on primary data collection. Considering feasibility and comparability and following relevant discussions with the HA4 leads (P1-MUW), WP4 leads (P3-CUB, P8-LSE) are suggesting to apply the proxy good method for valuing voluntary time in the PECUNIA project and the WP4 costing template was set-up accordingly

The **proxy good method** takes into consideration the type of task that is performed when placing a value on the informal care provided. The time spent on informal care is valued by the reference price of a close market substitute (Koopmanschap et al. 2008). This way of valuation of informal care requires that a market substitute exists for the non-market commodity which is assumed to be of the same quality (van Den Berg et al. 2006). For example: The caregiver spends two hours cleaning the care recipient's room and 30 minutes administering medication. This would require to use a) the wage rate for a housekeeper to value the two hours spent on cleaning and b) a nurse's wage rate to value the 30 minutes spent on administering the medication.

The **harmonisation** strategy for unit cost calculation was developed in HA4 by P1-MUW (HA4 lead). The main task of P1-MUW was to provide suggestions for the harmonization of the costing templates in the WPs1-4 in terms of general structure, terminology, instructions, formatting and methodological foundation. The harmonisation strategy was discussed by the whole consortium at the 2nd Progress Meeting in Basel (July 2019) and a written harmonisation guideline as well as an illustrative costing template (in Microsoft Excel) were shared with WPs1-4 by P1-MUW. Based on written feedback and bilateral TCs between P3-CUB and P1-MUW, the HA4 harmonisation guideline and the illustrative costing template, WP4 leads (P3-CUB, P8-LSE) developed the draft sector specific costing templates for WP4 (M19-M21). Items included in the WP4 template, their unit of measurement in the RUM (HA3) and the suggested costing approach (HA4), for

which the WP4 costing template is applicable, are summarized in **Table 1**. The sector specific draft costing templates was finalised by P3-CUB based on bilateral TCs with P1-MUW (M22).

The draft WP4 costing templates consisted of two excel sheets, WP4 unit cost template (**Appendix Figure 2**) and WP4 price collection template (**Appendix**

Figure 3). Draft unit cost template was designed to provide basic instruction, collect unit cost information (reference year, country and currency) and collect hourly rates of different market providers for different type of activities (domestic assistance, personal care, supervision, practical help) (**Appendix Figure 2**). Draft price collection template was designed by P3-CUB and P8-LSE to facilitate direct data collection from the service provider. In the Excel worksheet, the service provider is asked to specify its main characteristics (Module 1 and 2) by entering the following information: name of the provider, date of fill in, location, year of price data, currency, size of the organization. In Module 3, respondents may enter hourly rates for their various care services such as domestic assistance, practical care, personal care and supervision. (**Appendix Error! Reference source not found.**).

Table 1: Links between HA1-4 for WP4 costing templates

Item name *HA1*	DESDE 2.0 PECUNIA code *HA2*	Recommended unit of measurement in line with PECUNIA RUM *HA3*	Costing approach *HA4*	Sector
Domestic assistance	Not applicable*	per hour	time value, replacement cost method	Patient and family domain
Practical support	Not applicable*	per hour	time value, replacement cost method	Patient and family domain
Personal care	Not applicable*	per hour	time value, replacement cost method	Patient and family domain
Supervision	Not applicable*	per hour	time value, replacement cost method	Patient and family domain

*Not applicable: Informal care is not seen as a service because informal time has a time value and therefore it is not expected to be coded as part of the DESDE coding a system.

2.2 Internal validation of WP4 costing templates (until November 2019; M23)

After developing the WP4 draft costing templates, an internal pilot-test was performed. For this, the country leads (P1-MUW (AT), P2-UKE (DE), P3-CUB (HU), P4-UM (NL), P8-LSE (UK)) from each participating country (Spain was not included as the Spanish partner P6-SESCS will conduct the validation of the PECUNIA unit cost tools in year 3 of PECUNIA as part of WP6) validated the WP4 template by pilot-testing its applicability with national data. They provided feedback and made suggestions for further developing the template. The internal validation took place between 7 November and 5 December November 2019 (M23). This was followed by a reflection stage in M24 during which WP4 lead P3-CUB and co-lead P8-LSE improved the template based on the suggested changes and feedbacks from consortium TC (05-12-2019).

The pilot testing and validation of the WP4 costing templates by the country leads resulted in an overview of the WP4-related findings on the country-level. Feedback and suggestions for improvement are summarized in **Table 2**. One of the main findings of the country-level validation was that service providers do not apply differentiated prices for different activities (i.e. domestic assistance, practical support, personal care, supervision). Secondly, most of the necessary input information for the unit cost calculation is available through web-based search. Thirdly, the template was not applicable in the Netherlands,

because home care is fully financed by the government and market prices do not reflect real costs. To address this feedback, the template was redesigned by WP4 lead in collaboration with the H4 lead. The main changes were the followings:

1. The primary price collection template was removed as it does not seem necessary in practice
2. An additional module (Module 3a) was added in unit cost template to collect national estimates for replacement cost. In the case where there are no market-based service providers (see the example of the Netherlands), the researcher can provide a national estimate for the replacement cost here.
3. Market prices for the replacement of different informal care activities are not any more collected. Informal care is valued by a single replacement cost. Module 3b of the unit cost template has been adapted accordingly. This modification of the unit cost template had impact on the finalization of the resource use measurement questionnaire (D4.3) as well. As informal care is valued with a single unit cost, it is not necessary to ask about different types of activities in the RUM questionnaire.

Table 2: Country-level validation of WP4 costing templates
Source: WP4 based on input received from PECUNIA country leads.

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3 Results

The validated WP4 unit cost template was designed to calculate replacement prices for informal care. The WP4 template is an **Excel document in English language** and consists of **three modules in one excel sheet** (see **Appendix Figure 4**). The unit cost templates may be self-completed by e.g. a researcher, either based on existing national-level data or primary data collected by the researcher.

Description of the validated template (Figure 4): At the top, the template gives with brief instructions and basic information (Module 1). Next, unit cost information such as the reference year, country and currency can be entered (Module 2), this part is identical for all WPs1-4 unit cost templates. In Module 3a, the national level estimate for the replacement cost can be entered. In Module 3b, market prices of home care providers can be entered. As a result of validation, a single price is collected from each provider. To complete Module 3b of WP4 unit cost template, it is recommended to identify up to 10 providers. The unit cost is defined as the simple average of the collected prices.

The results **(D4.4), i.e. the validated unit cost template worksheet, are fully in line with objective O4.3 of WP4**, i.e. the development of unit cost template for the patient and family sector.

4 Conclusions

Based on the WP4 unit cost template, the PECUNIA country leads will develop national unit costs for a selected number of resources in year 3 (until M32). These national unit costs together with the unit costs developed within WPs1-3 will be compiled by HA4-lead as a preparatory step for the development of the final unit cost compendium due in M35. Prior to the finalization of the compendium, **external validation of the developed unit costs** will be sought via **several channels**:

Firstly, with regards to the general methodology, via presentation of selected results (valuation approaches, unit cost calculation) **at relevant international conferences** (e.g. EuHEA conference in Oslo, Norway, 7-10 July 2020; 16th World Congress on Public Health in Rome, Italy, 12-17 October 2020; ISPOR conference in Milan, Italy, 14-18 November 2020) by WP1-4 leads. As proposed by the Scientific Advisory Board (SAB) at the last SAB meeting in May 2019, external feedback may also be sought from the **potential end-users** of the costing templates, e.g. national health insurances and ministries.
Secondly, a **comparative evaluation of PECUNIA unit costs against existing national/regional unit costs as well as other publicly available relevant estimates** is foreseen to be conducted by the country leads on a convenience sample of the developed unit costs to determine e.g. the variability in the calculated estimates. Thirdly, P6-SESCS will conduct a full validation of the PECUNIA unit cost tools for Spain (D6.1) and for Health Technology Assessment (D6.2) in year 3.

Based on the developed exemplary unit costs which are due in August 2020 (M32), a **central PECUNIA compendium** will be jointly developed by HA4 lead and the WPs1-4 leads (due in December 2020; M36), **corresponding to D1.5, D2.5, D3.5 and D4.5**. Based on these results, the PECUNIA consortium aims to continue the collaboration after the end of the project after December 2020 and to further work on the developed tools and templates. Different plans, e.g. the set-up a multi-sectoral database (MsExcel® or other format) including the calculated unit costs for selected services (AT, DE, HU, NL, UK) from all sectors and countries, will be explored as part of exploitation activities in year 3.

5 References

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2. Van den Berg, B., Brouwer, W., van Exel, J., Koopmanschap, M., van den Bos, G. A. M., & Rutten, F. (2006). Economic valuation of informal care: Lessons from the application of the opportunity costs and proxy good methods. Social Science & Medicine, 62(4), 835–845.
3. Van den Berg B, Brouwer W, van Exel J. Economic valuation of informal care: the contingent valuation method applied to informal caregiving. Health Economics, 14: 196-183.

6 Appendix

Figure 2: Draft WP4 unit cost template developed for internal validation (screenshot from excel spreadsheet)

Confidential information removed

Figure 3: Draft WP4 price collection template developed for internal validation (screenshot from excel spreadsheet)

Confidential information removed

Figure 4: Modified WP4 unit cost template following the internal country-level validation (screenshot from excel spreadsheet)

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