

REVIEW

Costs and Benefits of Long-Term Psychoanalytic Therapy: Changes in Health Care Use and Work Impairment

Saskia de Maat, PhD, Frans Philipszoon, MD, Robert Schoevers, MD, PhD, Jack Dekker, PhD, and Frans De Jonghe, MD, PhD

Objective: systematic review regarding the effectiveness of long-term psychoanalytic therapy (LPT) on health care use and work impairment in adult outpatients. **Method:** a systematic search for studies published between 1970 and 2005. Calculation of the weighted mean changes between pretreatment and treatment termination, and between pretreatment and follow-up. The findings are translated into financial terms, and the costs of treatment are balanced against the financial gains. **Results:** seven studies ($n = 861$) met all the inclusion and none of the exclusion criteria. The mean cost of LPT per patient was €20,900. During the year preceding treatment termination and the year preceding mean follow-up (2.9 years), the average reduction was 85% and 59%, respectively, in the number of hospital days; 54% and 56%, respectively, in the number of medical consultations; 70% and 19%, respectively, in the number of medication users, and 61% and 67% in days of sick leave. Health care use and sick-leave costs fell by an average of €5,584, or 66%, between the year preceding the start of psychotherapy and the year preceding treatment termination. At mean follow-up (2.9 years) these costs reductions were still apparent, as the reduction was €5,372, or 64%, in the year preceding follow-up. The break-even point for benefits and treatment costs was approximately three years after treatment termination. The reduction in work impairment appears to be the main factor (65% to 75%) in these positive results. **Conclusions:** our data suggest that LPT substantially reduces health care use and sick leave. The benefits seem to endure for years after termination and reach the point of counterbalancing the costs of treatment approximately three years after treatment termination. (HARV REV PSYCHIATRY 2007;15:289–300.)

Keywords: costs and benefits, financial gains, health care use, long-term psychoanalytic therapy, work impairment

From *Mentrum Mental Health Institute—Research, Amsterdam* (Drs. de Maat, Schoevers, Dekker, and De Jonghe); *PhilMed ZorgMarketing* (Dr. Philipszoon).

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Correspondence: Jack Dekker, Klaprozenweg 111, P.O. Box 75848, Amsterdam 1070 AV, the Netherlands. Email: jack.dekker@mentrum.nl

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In recent decades, the costs and benefits of medical care have increasingly been the subject of attention—and concern—of patients, therapists, health insurers, and politicians alike. Psychotherapy is no exception, though the relevant literature is scarce and focuses mainly on time-limited (cognitive-behavioral) psychotherapies. It is unclear whether long-term psychoanalytic therapy (LPT) is cost-effective.

Three reviews we discuss here deal predominantly with short-term psychotherapies. Mumford and colleagues¹ reported that in 85% of the 58 studies included in their review, the use of medical care was reduced after psychotherapy. Gabbard and colleagues² reported the results of a review that included 35 studies. They found that 88.9% of the studies suggested that psychotherapy has a beneficial economic

impact. The authors concluded: "Psychotherapy appears to have a beneficial impact on a variety of costs . . . Much of that impact accrues from reductions in inpatient treatment and decreases in work impairment." Baltensperger and Grawe³ reported the results of a review that included 124 studies. They found that psychotherapy results in cost reductions relating to health services and work impairment. One of the studies they reported on⁴ included a financial evaluation of work impairment and reported a net cost savings in the two years after treatment termination of DM 21,370 (roughly USD 15,000) per patient. Importantly, these reviews illustrate the cost-effectiveness of psychotherapy, but they also have some limitations. First, they cover a wide variety of patient populations and disorders, and this heterogeneity precludes any conclusion specified by diagnoses. Second, only a few of the primary studies deal with issues relating to work impairment.

Two studies deserve attention because of their longer treatment durations. Hall and colleagues⁵ calculated the net costs of one year of psychotherapy for borderline personality disorder (BPD) patients (as described in Stevenson & Meares),⁶ defining net costs as the difference between the costs of health care services during the 12 months before the start of treatment and the costs of psychotherapy plus those of health care use for a period of 12 months after treatment termination. The authors reported a net cost saving of AUD 18,000 per patient, mostly due to reduced hospital admissions. Bateman and Fonagy⁷ assessed the health care costs for BPD patients assigned to either 18 months of partial hospital treatment or treatment as usual. On the basis of their data, we calculated the net costs of both groups in a way similar to that of the Hall study. The net cost saving was USD 14,400 for the hospital group and USD 6,000 for the treatment-as-usual group. Both studies were restricted to health care costs for BPD patients.

Although some individual studies cover certain aspects of cost-effectiveness of some psychoanalytic therapies for some patients, there is no systematic overview of the evidence for the cost-effectiveness of long-term psychoanalytic therapy. It is therefore not known whether LPT is cost-effective. The aim of this article is twofold. First, we perform a systematic review of relevant studies published from 1970 until 2005 relating to the effects of LPT on health care use and work impairment. Second, we present a financial evaluation of the costs of LPT compared to its benefits in the same two areas.

METHODS

Literature Search

A literature search was conducted in Pubmed, Embase, Cochrane Database of Systematic Reviews, Cochrane Cen-

tral Register of Controlled Trials, PsychLit, and ACP Journal Club. The following subject headings were applied: long-term psychotherapy, psychoanalysis, psychoanalytic psychotherapy, psychodynamic therapy. The time limit was 1970. There were no limits set on language. Cross-references in the retrieved publications were searched. The Open Door Review,⁸ the review by Brandl and colleagues,⁹ and the review by Leichsenring¹⁰ were used as additional sources of information. There was no systematic effort to find unpublished data.

The following inclusion and exclusion criteria were applied:

1. The studies were required to be "outcome-intervention studies" that provided (in addition to other outcome measures) data about effects on health care use or work impairment issues.
2. The studies had to be either randomized, controlled trials (RCTs) or cohort studies. Case studies or case series were excluded.
3. The studies had to relate to individual, outpatient psychoanalytic therapies with adult patients (18 to 65 years). Studies relating to children or the elderly, as well as studies conducted in clinical or day-care settings, were excluded.
4. The studies had to deal with "standard" patients in "standard" psychoanalytic private practices. In DSM-III-R terms, the implication of this constraint is indicated by the results of a review by Doidge and colleagues¹¹ of 510 psychoanalysts in the United States, Canada, and Australia, involving 1718 patients: 65% of the patients had a mood disorder, 44% an anxiety disorder, and 73% a personality disorder; 3% had no DSM diagnosis at all; the modus of DSM-III-R disorders was 3. The authors mention, in addition, that 80% had received previous treatment. These results are corroborated by the DSM-IV findings of Friedman and colleagues¹² for 51 psychoanalysts and 551 patients: 46% of the patients had an Axis I disorder, 12% an Axis II disorder, and 42% both an Axis I and an Axis II disorder. We included these more "common" Axis I and II disorders found in private therapists practices, but excluded the disorders that are mostly treated in health care institutions. For example, we did not exclude BPD and other severe personality disorders, but we did exclude "heroic indications,"^{13,14} psychotic disorders such as schizophrenia,¹⁵ somatic illnesses such as juvenile-onset, insulin-dependent diabetes,¹⁶ and eating disorders,¹⁷ as well as studies focusing exclusively on rare disorders such as Munchausen by proxy.
5. The average length of treatment had to be at least one year and consist of at least 50 sessions.

Treatments included psychoanalytic psychotherapy and also psychoanalysis.

6. The methodological quality of each study was required to be sufficient, as independently assessed with the aid of a checklist (see Appendix 1) by two of the authors (SdM & FdJ).

DATA EXTRACTION

All data regarding the number of sessions, health care use, and work impairment were extracted from each article. It emerged that data was available only about the number of hospital days and medical visits, the percentage of patients taking medication, and the number of sick-leave days. The measurement points were: before or at start of treatment; at treatment termination; and at follow-up.

Reduction Calculations

The weighted mean reductions of all parameters across the studies were calculated by comparing the situation before the start of treatment to that at treatment termination and at mean follow-up.

Financial Evaluation

In order to assess the costs and benefits, and to present a financial evaluation, we applied present-day financial costing standards to the data.^{18–21} As these sources represent the situation in the Netherlands in 2003 and 2004, we indexed them for 2005. See Appendix 2 for all cost calculations. The average indexed cost of a psychotherapy session was taken to be €76. We calculated the treatment costs of an “average LPT” by multiplying the mean number of sessions over all studies by €76 (for results, see Results/Literature Search below). The average indexed cost of a sick-leave day was considered to be €288.30, of a day in a psychiatric hospital, €257.55; of an average medical consult, €38.91; and of medication use, €272.55 per year per patient (see Appendix 2). Pretreatment costs were computed by multiplying the mean number of sick-leave days, hospital days, medical consultations, and medication use by the costs mentioned before. Post-treatment costs and follow-up costs were calculated similarly: mean number of sick-leave days, hospital days, consultations, and medication at the specific time multiplied by the same amounts mentioned. The average benefit of LPT was calculated as the difference between pre- and post-treatment costs and also as the difference between pretreatment and follow-up costs.

RESULTS

Literature Search

A total of 742 studies was initially found. Based on screening of titles and abstracts, 672 studies were excluded in the first selection round. Reasons for exclusion were: patients samples based on a somatic illness and not a psychiatric illness; case studies; theoretical articles; epidemiological studies; studies dealing with training of professional therapists; studies dealing with alcohol and drugs; patient samples concerning only geriatric patients; very specific diagnoses such as Munchausen by proxy; or articles dealing with methodological issues. The remaining 73 articles were retrieved; another 45 studies were excluded. Reasons for exclusion in this round were: process-outcome studies; studies focusing on children; reviews; studies of short-term therapies; studies focusing on therapist variables; or studies on inpatients. Finally, 28 outcome studies were retrieved of LPT in patients with the indications that we aimed for (see Methods section). Of these studies, seven offered information on data about effects on health care use or work impairment issues. The seven studies we included are presented in Table 1. The number of patients included in the studies ranged from 25 to 500 (total $n = 861$), treated with either psychoanalysis or psychoanalytic psychotherapy. The number of sessions ranged from 80 to 640, averaging 139 in psychotherapy and 413 in psychoanalysis. The mean for all the studies was 275. An LPT therefore costs €20,900 per person ($275 \times €76$), on average. All studies except one (the still-ongoing study of Rudolf and colleagues)²⁷ included follow-up data. Length of follow-up varied from 1 to 6 years (mean 2.9 years). The patients in the studies of Monsen and colleagues²³ and Stevenson and Meares⁶ (total $n = 55$) suffered from severe personality disorders and were treated in health care facilities. The remaining studies dealt with “standard” patients (total $n = 806$) in “standard” psychoanalytic private practices.

Sick Leave

Six studies, involving a total of 776 patients, reported data on changes in patterns of sick leave expressed in days per annum (Table 2). The average pre-/post-treatment reduction was 61%, and the mean pretreatment/follow-up reduction was 67%. The follow-up periods ranged from one year to six years, with a mean duration of three years. The number of sick-leave days was exceptionally high in the study of Stevenson and Meares,⁶ which is not surprising since the study looked at borderline patients, whereas most other studies looked at “normal private psychoanalytic practice.” The results of Table 2 have been calculated without this study, which can be considered an outlier. Mean number of

TABLE 1. Long-Term Psychoanalytic Therapy Studies Including Economic Evaluation Data

Study	<i>n</i>	Diagnosis	Patient demographics	Number of sessions (mean)	Duration (mean)	Time to follow-up	Study design	Assessment	General remarks
Dührsen (1986) ²²	62 (psychoanalysis and psychotherapy)	Unspecified (Authors mention that patients in LPT had more stress factors in childhood than healthy subjects and also more than the initially assessed patients in the Institute. Patients in psychotherapy were the sickest, and in psychoanalysis, the least.)	Psychotherapy group had more hospital days and was more unable to work than psychoanalysis group	289 ^a	5 years	Retrospective	SL: HCI HD: HCI	Random sample of patients ending LPT; results not broken into treatment groups; asserted that treatment groups not different in results regarding sick leave and hospitalization; likewise asserted that subjects had high educational and occupational status	
Stevenson & Meares (1992) ⁶	30 (psychotherapy)	Borderline personality disorder and "persisting social dysfunction" (e.g. unemployment, absence, or dysfunctional relationships)	Mean age, 29.4 years; female, 63%; married, 30%; government financial assistance, 73%; college education, 20%; owned own home, 7%	80 ^b	12 months	1 year	Prospective SL: Pv/IO HD: Pv/IO MC: Pv/IO MU: Pv/IO	All patients reported previous lack of success in other therapies (lasting > 6 months); 48 patients started therapy, with 37 completers, 7 continuing, and remaining 30 included in study; therapists were relatively inexperienced; all outcome measures significantly improved after treatment	
Monsen et al. (1995) ²³	25 (psychotherapy)	96% Axis I disorder (52% major affective disorder, 12% Axis II schizophrenia), 92% Axis II disorder (28% severe personality disorder); mean duration of problems = 4 years	Mean age, 28.6 years; married, 24%; female, 76%; unemployed, 56%; previously hospitalized, 16%	102 ^c	25.4 months	5.2 years	Prospective SL: Pv/IO MC: Pv/IO MU: Pv/IO	Outpatient clinic; majority of patients previously had at least a short-term treatment; 25 patients recruited; all remained through termination, with 21 at follow-up	
Keller et al. (1998) ²⁴	36 (psychoanalysis) 11 (psychotherapy)	49% affective disorder; 20% personality disorder (private practice patients); 28% anorexia or somatoform disorders; 34% with symptoms of >10 years' duration	Mean age at follow-up, 44.5 years; mean age at start of treatment, 35 years; female, 69%; married, 74%	193 (psychoanalysis) 78 (psychotherapy) 166 (overall mean)	29–36 months	6 years	Retrospective SL: HCI HD: HCI MC: Pt MU: Pt	Follow-up study of Jungian therapy patients; only the continuously employed patients were included in data regarding sick leave, etc.; 75% had psychoanalysis, but results not specified according to treatment; data were compared to general population of a health care insurance company	
Heinzel et al. (1998) ²⁵	500 (unspecified psychoanalysis and psychotherapy)	Unspecified (private practice patients)	Mean age, 44.6 years; female, 71%; married, 52%; working full time, 56%; working part time, 30%; college education, 82%	261	41 months	2 years	Retrospective SL: Pt HD: Pt MC: Pt MU: Pt	Random sampling of German psychoanalysis patients; no differences found between individual and group therapies or between different psychoanalytic orientations (Freudian, Jungian, etc.)	
Beutel & Rastin (2002) ²⁶	74 (psychoanalysis) 80 (psychotherapy)	Unspecified (private practice patients); 75% of patients reported well-being as severely compromised before treatment	Mean age, 44.6 years; female, 71%; married, 52%; working full time, 56%; working part time, 30%; college education, 82%	640 (psychoanalysis) 240 (psychotherapy) 440 (overall mean)	48 months	6 years	Retrospective SL: Pv/HCI MC: Pv/HCI	Part of larger, follow-up study in which 194 patients were interviewed and 207 received, and 174 (74%) returned, a questionnaire, with latter being subject of this portion; no reported differences found between psychoanalysis and psychotherapy	
Rudolf et al. (2003, 2004) ²⁷	23 (psychoanalysis) 20 (psychotherapy)	Psychoneuroses, 56%; personality disorders, 52%; symptoms > 5 years' duration	Mean age, 37.2 years; female, 69%	297 (psychoanalysis) 70 (psychotherapy) 191 (overall mean)	Ongoing	Ongoing	Prospective SL: HCI HD: HCI MC: HCI MU: HCI	Naturalistic, multicenter study in Germany with severely ill patients; no differences were found between psychoanalysis and psychotherapy; patients did not differ at baseline	
Overall mean	861			275		2.9 years			

HCI, health care insurance company; HD, hospital days; IO, independent observers (including medical records, referral sources, relatives); MC, medical consultations; MU, medication users; Pt, patient; SL, sick leave; Th, therapist.

^aExtrapolated from the means of Keller, Heinzel, and Beutel.

^bBest guess, twice weekly during 12 months.

^cBest guess, once weekly during 25.4 months.

TABLE 2. Sick Leave from Work (Days/Year)

Study	<i>n</i>	Number of sessions (mean)	Pretreatment	Post-treatment	Follow-up (years later)	Reduction at post-treatment/follow-up
Dührsen (1986) ²²	62	289	32.4	n.d.	8.0 (5)	n.d./75%
Stevenson & Meares (1992) ⁶	30	80	134.1	n.d.	41.1 (1)	n.d./69%
Keller et al. (1998) ²⁴	47	166	16	n.d.	8.0 (6)	n.d./50%
Heinzel et al. (1998) ²⁵	500	261	14.5	8.5	5.9 (2)	41%/59%
Beutel & Rastin (2002) ²⁶	94	440	10.3	6.3 ^a	4.0 (6)	39%/61%
Rudolf (2003) ²⁷	43	191	26.3	8.0 ^b	n.d.	70%/n.d.
Totals						
Mean days			20.8	8.1	6.9	
Range			10.3–134.1	6.3–8.5	4.0–41.1	
Reduction (days/%)				12.7/61%	13.9/67%	

n.d., no data.

^aOne year into treatment.

^bTwo years into treatment.

sick-leave days pretreatment is 16.2; post-treatment, 8.1 (reduction of 50%); and at follow-up, 6.0 (reduction compared to pretreatment, 63%). Rudolf and colleagues²⁷ broke down the results according to the treatment modality: the rate of sick leave before the start of treatment was 24.6 days per annum in psychoanalysis and 28.3 days per annum in psychotherapy. After two years of treatment, it was 6.8 days per annum in psychoanalysis and 9.3 days per annum in psychotherapy, which was a reduction of 72% for psychoanalysis and of 67% for psychotherapy. The authors also included for comparative purposes sick-leave data for the general German population in the years relevant for their study: 17.3 days per annum in 1996 and 11.4 days per annum in 2002, which was a reduction of 34%. Keller and colleagues²⁴ compared the results of their patient sample to the general population of a German health care insurance company (Barmer Ersatz Kasse [BEK]). Extrapolated to 100 patients (based on their sample of 47 patients), they found a duration of work disability days of 41.6 (one year before treatment) and 13.5 (one year after treatment), showing a reduction of 68%. In the general population of BEK, the disability days were 16 and 15 days, respectively, within the same time frame, a reduction of 6%. Table 2 does not include the data of Monsen and colleagues²³ relating to patients with “severe personality disorders.” Instead of the number of sick-leave days, the authors stated the percentage of patients (*n* = 21; 102 sessions [total]) who were unemployed or on (insured) long-term sick leave: 55% at the start of treatment, 20% at treatment termination, and 19% at follow-up (five years), making for a sustained reduction of 84%. Before treatment, at termination, and at follow-up, the percentages of patients with skilled work or a job requiring at least three years education above senior high school were 15%, 25%, and 53%, respectively.

The percentages of patients with a high monthly net income were 10%, 20%, and 48%, respectively. The authors noted, “During the treatment period, the increase in income for this sample was 9.6% greater than the average increase for personal taxpayers in Oslo.”²³ Apparently, these patients became not only healthier, but wealthier.

Days in Hospital

Five studies, dealing with a total of 719 patients, reported data on changes in hospitalization rates, expressed in days per annum (Table 3). The follow-up periods ranged from 1 year to 6 years, with a mean duration of 2.6 years. The mean pre-/post-treatment reduction was 85%, and the mean pretreatment/follow-up reduction, 59%. The mean pre/post reduction is striking and seems to have largely disappeared at follow-up. What explains this result, however, is that the study of Stevenson and Meares,⁶ which had the largest number of hospital days at pretreatment, presented no post-treatment data. We have calculated the results of Table 3 without this study, which can be considered an outlier. Mean number of days pretreatment in hospital was then 4.4; post-treatment, 1.2 days (a reduction of 27%); and at follow-up, also 1.2 days (a reduction of 27%).

For comparative purposes, Dührsen²² stated the mean number of days in hospital per annum of all insured persons in Germany. In the period corresponding to the year preceding the start of treatment in her study, it was 4 days per annum. In the period corresponding to the year preceding follow-up in her study, it was 3.5 days per annum. For patients in this study, the number of hospital days prior to treatment was 150% higher than that of the average insured person; after treatment, it was 46% lower.

TABLE 3. Days in Hospital (Days/Year)

Study	<i>n</i>	Number of sessions (mean)	Pretreatment	Post-treatment	Follow-up (years later)	Reduction at post-treatment/follow-up
Dührsen (1986) ²²	62	289	10.0	n.d.	1.9 (5)	n.d./81%
Stevenson & Meares (1992) ⁶	30	80	86.1	n.d.	44.1 (1)	n.d./49%
Keller et al. (1998) ²⁴	58	165	8.0	n.d.	1.0 (6)	n.d./87%
Heinzel et al. (1998) ²⁵	510	261	3.4	1.2	1.2 (2)	65%/65%
Rudolf (2003) ²⁷	59	297	3.4	1.3 ^a	n.d.	62%/n.d.
Totals						
Mean days			7.8	1.2	3.2	
Range			2.4–86.1	1.2–1.3	1.0–44.1	
Reduction (days/%)				6.6/85%	4.6/59%	

n.d., no data.

^aTwo years into treatment.

Medical Consultations

Three studies,^{6,25,26} involving a total of 632 patients, reported data on changes in outpatient medical consultations, expressed in number of visits per annum (Table 4). The follow-up periods ranged from 1 year to 6 years, with a mean duration of 2.6 years. The mean pre-/post-treatment reduction was 54%, and the mean pretreatment/follow-up reduction, 56%. Predictably, in the study of Stevenson and Meares⁶ looking at borderline patients, the number of medical consultations was exceptionally high. We have calculated the results of Table 4 without this study, which can be considered an outlier. Mean number of medical consultations pretreatment is 5.4; post-treatment, 3.3 (a reduction of 39%); and at follow-up, 2.9 (a reduction of 46%). Heinzel and colleagues²⁵ broke down the results according to the type of visit. The reduction in the number of visits to general practitioners was 40% at treatment termination and 52% at follow-up. The reduction in the number of visits to medical specialists was 35% at treatment termination and 40% at

follow-up. The data of Keller and colleagues²⁴ ($n = 111$; 165 sessions [mean]) regarding medical consultations are not included in Table 4, because the authors do not provide figures regarding the initial situation. They did report, however, the number of medical visits (women, 11 per annum; men, 10 per annum) at follow-up (six years after treatment termination). They found that 50% of the patients reported “less frequent” medical visits during the year preceding follow-up than during the year preceding the start of treatment. For comparative purposes, they referred to two studies^{28,29} in private practice. The mean number of consultations for women in those studies was 15 and 14, respectively, and for men it was 12 and 11, respectively. Table 4 also does not include the data of Monsen and colleagues²³ ($n = 21$; 102 sessions [mean]) regarding the use of health and social services, expressed as a percentage of patients with at least 10 contacts per annum (“frequent users”). The percentage of frequent users during the year preceding the start of treatment, treatment termination, and follow-up (five years) was 70%, 20%, and 30%, respectively, for somatic services; 30%,

TABLE 4. Medical Consultations (Visits/Year)

Study	<i>n</i>	Number of sessions (mean)	Pretreatment	Post-treatment	Follow-up (years later)	Reduction at post-treatment/follow-up
Stevenson & Meares (1992) ⁶	30	80	42.0	n.d.	6.0 (1)	n.d./86%
Heinzel et al. (1998) ²⁵	491	261	5.1	3.2	2.7 (2)	37%/47%
Beutel & Rastin (2002) ²⁶	111	438	6.7	3.7 ^a	4.0 (6)	45%/40%
Totals						
Mean days			7.1	3.3	3.1	
Range			5.1–42.0	3.2–3.7	2.7–6.0	
Reduction (days/%)				3.8/54%	4.0/56%	

n.d., no data.

^aOne year into treatment.

TABLE 5. Medication Use (Percentage of Patients Taking Medication)

Study	<i>n</i>	Number of sessions (mean)	Pretreatment	Post-treatment	Follow-up (years later)	Reduction at post-treatment/follow-up
Monsen et al. (1995) ²³	20	102	50	25	14	50%/72%
Keller et al. (1998) ²⁴	111	165	56	n.d.	45 (6)	n.d./19.7%
Rudolf (2003) ²⁷	59	297	37.4	11.8 ^a	n.d.	68%/n.d.
Totals						
Mean			49.6	15	40.3	
Range			37–56	11–25	14–45	
Reduction (%/ % change)				34.5/70	9.3/19	

n.d., no data.

^aTwo years into treatment.

0%, and 24%, respectively, for psychiatric services; and 10%, 0%, and 0%, respectively, for social services.

Medication Users

Three studies,^{23,24,27} involving a total of 190 patients, reported data on medication users, expressed as a percentage of patients taking medication (Table 5). Mean follow-up period was 5.8 years. The mean pre-/post-treatment reduction in medication users was 70%, and the mean pretreatment/follow-up reduction, 19%. The mean pre/post reduction is striking and seems to have largely disappeared at follow-up. What explains this result, however, is that the largest study, that of Keller and colleagues,²⁴ which had the largest percentage of medication users, presented no post-treatment data. Rudolf and colleagues²⁷ broke down the results according to the treatment modality: the percentage of medication users before the start of treatment was 30.4% in psychoanalysis and 45.8% in psychotherapy. After two years of treatment, it was 15.6% in psychoanalysis and 7.4% in psychotherapy, for a reduction of 49% in psychoanalysis and of 84% in psychotherapy. Table 5 does not include the data of Stevenson and Meares.⁶ The authors did not report the percentage of medication users but the mean number of different drugs used per day: 3.8 in the year preceding therapy and 0.63 in the year after it, for a reduction of 83%.

Financial Evaluation of the Pre/Post Changes

Table 6a summarizes the absolute pre-/post-treatment reductions in sick-leave days, hospital days, medical consultations, and medication users. The application present-day financial standards to these data (see Methods/Financial Evaluation and Appendix 2) resulted in the financial evaluation shown in Table 6b. The mean costs of health care use and sick leave during the year preceding the start of treatment were €8,414 per person. On average these costs fell to €2,828 per person (a reduction of 66%) during the

year preceding treatment termination. In that year, in other words, the savings amounted to €5,586 per person. The reduction in sick leave was the largest contributor (65% of the savings).

Financial Evaluation of the Pretreatment/Follow-up Changes

Table 7a summarises the absolute pretreatment/follow-up reductions in sick-leave days, hospital days, medical consultations, and medication users. The application of present-day financial standards to these data (see Methods/Financial Evaluation and Appendix 2) resulted in the financial evaluation shown in Table 7b. The costs of health care use and sick leave during the year preceding follow-up (mean, 2.9 years), compared to those costs during the year preceding the start of treatment, fell by €5,372, or 64%, per person. The reduction in sick leave accounted for 75% of the savings.

Tables 6 and 7 indicate that the benefits (i.e., the cost reductions) remained stable over time: 66% at treatment termination and 64% 2.9 years later. The relative and absolute importance of the reductions in sick-leave days increased during the years after treatment termination. Assuming that the benefits are similar in each year during

TABLE 6a. Pre/Post Changes in Sick-Learn Days, Hospital Days, Medical Consultations, and Medication Use

	Pretreatment	Post-treatment	Reduction
Sick-leave days/year (per patient)	20.8 (<i>n</i> = 776)	8.1 (<i>n</i> = 637)	12.6
Hospital days/year (per patient)	7.8 (<i>n</i> = 719)	1.2 (<i>n</i> = 569)	6.6
Medical visits/year (per patient)	7.1 (<i>n</i> = 632)	3.3 (<i>n</i> = 602)	3.8
Medication users (%)	50 (<i>n</i> = 190)	15.1 (<i>n</i> = 79)	34.5

TABLE 6b. Monetary Evaluation of Pre/Post Changes in Sick-Leave Days, Hospital Days, Medical Consultations, and Medication Use

	Pretreatment costs	Post-treatment costs	Reduction
Sick-leave days/year (per patient)	€5,994 (<i>n</i> = 776)	€2,347 (<i>n</i> = 637)	€3,647
Hospital days/year (per patient)	€2,007 (<i>n</i> = 719)	€312 (<i>n</i> = 569)	€1,695
Medical visits/year (per patient)	€278 (<i>n</i> = 632)	€128 (<i>n</i> = 602)	€150
Medication users (%)	€135 (<i>n</i> = 190)	€41 (<i>n</i> = 79)	€94
Total	€8,414	€2,828	€5,586

these 2.9 years, and since the total costs of treatment averaged €20,900 per person (see Results/Literature Search), the break-even point was reached three years after treatment termination (taking into account the savings achieved during the year before treatment termination and the three years thereafter).

DISCUSSION

There is a fierce discussion in progress about the cost-effectiveness of psychotherapy but a scarcity of studies examining the cost effects of long-term psychoanalytic therapy. This systematic review examined the literature relating to the effects of LPT on work impairment and the use of health care. It was found that at treatment termination and at mean follow-up (2.9 years), the average reduction in hospital days was 85% and 59%, respectively. The reduction in the number of medical consultations was 54% and 56%, respectively; in medication users, 70% and 19%, respectively; and in sick-leave days, 61% and 67%, respectively. The application of present-day financial standards (explained in Methods/Financial Evaluation and Appendix 2) to these data showed that, during the year preceding the start of psychotherapy, the cost of health care and sick leave was an average of €8,414 per person. The average cost reduction per person during the year preceding treatment termination and during the year preceding follow up was €5,586, or 66%, and €5,372, or 64%, respectively. The most important economic gains resulted from the reduction in absenteeism, followed by the reduction of hospital days. Further-

more, there is evidence that the benefits were stable. As the average cost of LPT as €20,900 per person, the break-even point was reached approximately three years after treatment termination.

Our review has several limitations. Most of the studies we included were cohort studies rather than randomized, controlled trials. However, except in the case of borderline patients, the design of RCTs in LPT research presents insurmountable, method-inherent feasibility problems.³⁰ One of them is that the most informative control conditions (no treatment, waiting list, or placebo) are not feasible in studies of long-term treatment. Furthermore, psychoanalysis and psychotherapy groups present severe limitations as control groups for each other, as their baseline characteristics are likely to be different, influencing the indication for psychoanalysis or psychotherapy. Similarly, comparisons against the general populations of health care insurance companies are inherently flawed since the respective populations also are very different at baseline. Furthermore, the strict design of RCTs requires naturalistic studies to demonstrate that a form of therapy works in the field.³¹ Consequently, cohort studies, which are a better reflection of actual clinical practice, provide the best available evidence as far as LPT is concerned.

Another limitation is that, despite our use of a checklist to assess the methodological qualities of the studies we included, the studies used in our review varied in quality. Four of the included studies were retrospective,^{22,24–26} and only three were prospective.^{6,23,27} Furthermore, some studies did not adequately describe treatments or diagnoses^{22,25}

TABLE 7a. Pre/Follow-Up Changes in Sick-Leave Days, Hospital Days, Medical Consultations, and Medication Use

	Pretreatment	Years to follow-up (mean)	Follow-up	Reduction
Sick-leave days/ year (per patient)	20.8 (<i>n</i> = 776)	3.0	6.9 (<i>n</i> = 733)	13.9
Hospital days/ year (per patient)	7.8 (<i>n</i> = 719)	2.6	3.2 (<i>n</i> = 660)	4.6
Medical visits/ year (per patient)	7.1 (<i>n</i> = 632)	2.7	3.1 (<i>n</i> = 632)	4.0
Medication users (%)	50 (<i>n</i> = 190)	5.8	40.3 (<i>n</i> = 131)	9.3
Overall		2.9		

TABLE 7b. Monetary Evaluation of Pre/Follow-up Changes

	Pretreatment costs	Years to follow-up (mean)	Follow-up costs	Reduction
Sick-leave days/year	€5.994 (<i>n</i> = 776)	3.0	€1,988 (<i>n</i> = 733)	€4,006
Hospital days/year	€2.007 (<i>n</i> = 719)	2.6	€824 (<i>n</i> = 660)	€1,183
Medical visits/year	€278 (<i>n</i> = 632)	2.7	€120 (<i>n</i> = 632)	€158
Medication/year	€135 (<i>n</i> = 190)	5.8	€110 (<i>n</i> = 131)	€25
Total	€8.414	2.9	€3,042	€5,372

or did not use independent assessors.²⁵ Four studies^{6,22,24,27} obtained data from objective sources such as insurance companies or medical records; the other three^{23,25,26} relied on data provided by patients or therapists. In the light of these methodological shortcomings, the data in this review should be interpreted cautiously. Prospective, adequately designed cohort studies in this field are necessary. Nevertheless, despite the methodological variation, the results of the studies in this review all point in the same direction.

Not all the studies provided both post-treatment and follow-up data. Our pretreatment, post-treatment, and follow-up calculations therefore each include different studies from one another. The studies presented no measures of variance to their mean outcomes, which obscures a broader perspective on the findings. Furthermore, there is one study (Stevenson and Meares)⁶ that can be considered an outlier. That study included only patients with severe personality disorders, and because of its exceptionally high absolute numbers, it increases the variance of the review outcomes. Excluding that outlying study decreases the mean reductions in sick-leave days, hospitalization days, and medical consultations. In our opinion these findings support the hypothesis that the sicker the patients are, the bigger the gains can be. In addition, we found only seven suitable studies, which is a small sample for a review. Even so, the number of patients in our review is large. Another shortcoming is that most studies did not provide separate data for psychotherapy and psychoanalysis. Consequently, we could not differentiate between the costs and benefits of standard psychoanalysis and those of psychoanalytic psychotherapy. The studies also provided no data about dose-response relationships, with the implication that they provide no information on the matter of an optimal LPT duration for a maximum economic benefit. As we made no comparisons against studies of time-limited psychotherapies, we cannot address the question of whether short-term treatments may yield similar results. In this context we can only refer to the general literature, which suggests that the effects of short-term therapies are short-lived (see, e.g., Gloaguen et al.³² and Hollon et al.).³³ Our study also suffers from the limitation that, although we increased homogeneity by

restricting ourselves to LPT, there remained some heterogeneity.

Furthermore, because the data mostly use naturally occurring termination of the therapies (and the follow-up thereafter), it is possible that a selection bias occurs. Healthier patients are likely to be able to end therapy after a few years, whereas sicker patients or those not getting better might not be included in the samples (for instance, because they are still in treatment). The result might be a bias toward stronger treatment effects. Similarly, some patients were still in therapy at the time of follow-up, with the consequence that some of the sustained benefits of LPT could be due to this effect.

Although all studies show improvement in outcomes regarding sick leave and health care costs, it is evident that the lack of comparable control groups complicates the interpretation of the data. We cannot present hard evidence that the improvements would not have occurred over time in the lives of these patients. In addition, even when there is a positive group average, some individual patients might not improve, or they might even deteriorate.

Finally, as many patients in the studies used medication alongside their psychotherapies, it is likely that a part of the effects could be subscribed to the pharmacotherapy.

Our financial evaluation also has limitations. First, we applied present-day financial standards in the Netherlands (explained in Methods/Financial Evaluation and Appendix 2) to the results of studies performed in other times in other countries. Our financial evaluations do not therefore reflect the “there and then” costs and benefits of the treatments. As costs and gains indubitably vary across countries, our conclusions cannot be generalized to other states. However, as we provide the gross numbers for changes in health care use and sick leave, local financial standards can easily be applied to the data. Second, a number of factors might lead to either overestimation or underestimation of the benefits. We cannot exclude the possibility that LPT results do not last for three years after termination, in which case we may have overestimated LPT benefits. We found indications, however, that the benefits steadily increase even after that time period,^{25,26} in which case we have

underestimated them. In addition, we may have underestimated the treatment costs by not including indirect costs—for example, time loss and travelling costs for patients, and supervision or costs for therapists. It seems a fair assumption, however, that well-treated patients do better in their careers and consequently earn higher incomes, pay more taxes, and consume more.²¹ We therefore most probably underestimate LPT benefits by not including (because of a lack of data) factors such as the detrimental effects of mental problems on work performance. Finally, our calculations refer almost exclusively to employed patients. The LPT benefits in patients supported by the welfare or other public systems would, of course, not include any reduction in sick leave, but it seems likely that at least some of them would regain the capacity to become economically productive and to participate in broader social intercourse.

The study of Monsen and colleagues²¹ supports this last suggestion; the level of employment rose from 35% prior to therapy, to 50% at treatment termination, and to 62% at follow-up. The study of Doidge and colleagues²² showed that 15% of the patients in analysis in Australia went from unemployment to employment (four years into treatment), and in the United States there was an 4.5% increase in employment (four years into treatment).

Our calculation regarding the break-even point of treatment costs and benefits is based on our findings that the benefits at treatment termination and at follow-up (mean follow-up, 2.9 years) appear to be similar. Of course, our assumption is that the benefits are also the same (at least on average) in all three years *between* treatment termination and follow-up. That assumption might be incorrect, clearly influencing the break-even point. At this point, however, we have no information on the either the benefits or costs between these two measurement points.

Finally, our estimations of the costs of the medication used are based on the average medication costs (across all types of patients) during a certain year. As it is unlikely that the patients presented in the studies of this review were “average” patients, their medication costs could be either under- or overestimated here. It might have been helpful to calculate the costs based on the number of medications that patients used, but there were not enough data for that purpose. In addition—again for lack of data—we presented only the number and percentages of patients that used medication, which is a very rough estimation of true changes in medication costs.

To our knowledge, our review is the first to summarize the available data regarding the effects of LPT on health care use and work impairment in adult, LPT outpatients and to translate them into financial terms. Despite the review’s limitations, we consider it a valid, albeit preliminary, evaluation. It can be concluded that patients treated with LPT experience enduring reductions in the use of health

care services and sick-leave days, and that these reductions likely offset the costs of treatment within three years after termination. Needless to say, what really matters here is the impact of treatment on the lives of individuals—which, being unquantifiable in economic terms, remains unaddressed.

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APPENDIX 1

Checklist for Quality Assessment of Cohort Research

- A. Study design
 1. Prospective study
 2. Matched control group
 3. Pre/post assessments
- B. Patients
 4. Clear inclusion and exclusion criteria
 5. Clear diagnostic description of patients
 6. Adequate size of patient sample
- C. Interventions
 7. Clear description of treatment
 8. Trained professionals
 9. Adherence
- D. Assessments
 10. Clear outcome measures
 11. Reliable and valid measure instruments
- E. Data
 12. More than one assessment source
 13. Adequate statistical methods
 14. Intent-to-treat or per-protocol analyses
- F. Results
 15. Adequate and clear description of the results
 16. Acceptable pre/post dropout
 17. Check for possible confounders
- G. Follow-Up
 18. Minimum follow-up of one year
 19. Acceptable dropout in follow-up
 20. More than one assessment source

APPENDIX 2 . Basis for Calculating Costs

	2003	2004	2005
consumer inflation index (CPB [Netherlands])		1.2%	1.8%
<i>ambulatory consult in an institution</i>	€71.54	€72.40	€73.70
<i>ambulatory consult psychiatrist</i>	€76.00	€76.91	€78.30
average cost of a therapy session	€73.77	€74.65	€76.00
<i>productivity per hour</i>	€34.98	€35.40	€36.04
cost of productivity loss per 8-hour day	€279.84	€283.20	€288.30
cost per day in psychiatric hospital	€250.00	€253.00	€257.55
<i>cost of a GP consult</i>	€20.20	€20.44	€20.81
<i>cost of a medical specialist consult</i>		€56.00	€57.01
average cost of a medical consult	€38.10	€38.22	€38.91
<i>cost of medication (in millions of Euros)</i>		€589.0	€599.6
<i>no. of patients using medication (in millions)</i>		2.2	2.2
average cost of medication per patient		€267.73	€272.55

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