Supplemental Table 1. Data Sources, Instruments Used, and Time of Measurement for Each Parameter of Interest

Parameter	Data source and/or instrument	Time of measurement
Clinical data (symptoms, PEF)	Medical patient record	Every 3 months
Utilities: QALY	Written questionnaire EuroQol-5D	Every 6 months
Resource use:		
– (Non) Routine consultations	Written cost questionnaire	Every 3 months
– Medication use (regular/emergency)	Written cost questionnaire	Every 3 months
– Hospitalization (yes/no)	Written cost questionnaire	Every 3 months
– Length of stay	Written cost questionnaire	Every 3 months
– No. of sick leave days	Written cost questionnaire	Every 3 months

PEF, peak expiratory flow; QALY, quality-adjusted life-year.

Supplemental Table 2. Definition of Markov Health States and Description of Implications for Daily Practice and/or the Markov Model

Health state	Definition	Implications
Successful control[a]	Patients should not experience: – night-time awakening due to asthma – emergency hospital visits – exacerbations – treatment related to adverse events causing a change in asthma therapy. Patients are required to meet at least two of the following criteria: – symptoms on $\leq$ 2 days – rescue bronchodilator used on $\leq$ 2 days and – total weekly use $\leq$ 8 puffs – morning peak expiratory flow $\geq$ 80% predicted.	–
Suboptimal control	Less than acceptable asthma control (e.g., patient's health state does not meet the criteria for "successful control") but the level of symptoms does not warrant any immediate intervention by a healthcare professional.	–
Primary care managed exacerbation	A situation in which a patient is managed in a primary care or outpatient setting by a healthcare professional for the treatment of an asthma exacerbation.	In the DMP under study, the location of treatment is at the GPs office for patients assigned to the GP or the RNS and the outpatient department of the hospital for patients assigned to the pulmonologist.
Hospital managed exacerbation	A situation in which a patient experiences an asthma exacerbation that requires an admission to the hospital.	For some patients, the management of the exacerbation will take place in the emergency room, after which they will be sent home; for others, an inpatient stay will be required. Because the mean length of hospital stay in our patient data was 11 days, the cycle length of the model was set to a 2-week period.
Death	All asthma-related and -unrelated mortality.	Absorbing state from which patients cannot move after they have entered. A specific "asthma death state" was not included because we did not expect that the DMP would have a direct impact on asthma mortality rates considering the 5-year time frame of the analysis.

[a]Definition based on the description of "well-controlled" of the Global Initiative for Asthma (GINA) goals for asthma management (19).
DMP, Disease management programs; GPs, general practitioners; RNS, respiratory nurse specialist.

Supplemental Table 3. Costs (€) Associated with Specific Parameters and per Health State for Usual Care and Disease Management (3-Month Data)

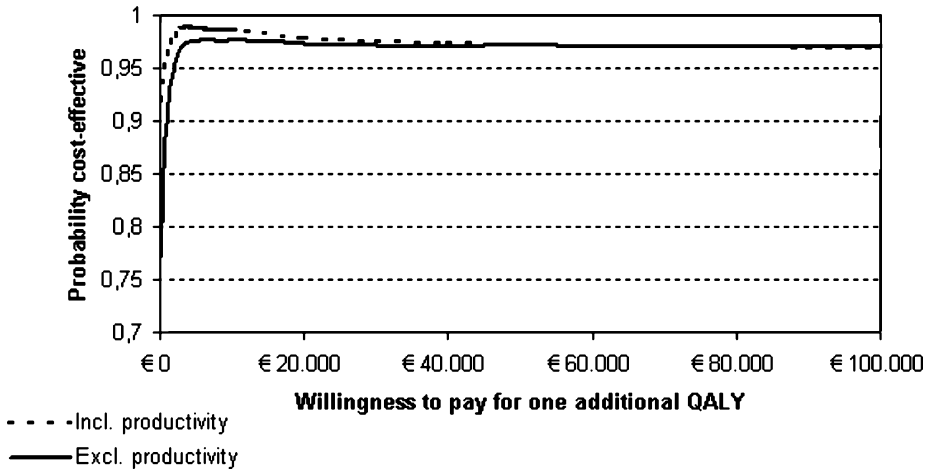
		Usual care			Disease management		
Variable	Distribution[a]	Mean (SE)	Alpha	Beta	Mean (SE)	Alpha	Beta
Routine consultations	Gamma[b]	9.5 (1.9)	25.0	.4	10.5 (1.5)	49.0	.2
Nonroutine consultations	Gamma	26.2 (6.4)	16.7	1.6	18.0 (4.9)	13.4	1.3
Regular medication	Gamma	28.2 (7.8)	13.1	2.2	29.8 (6.2)	23.1	1.3
Emergency medication	Gamma	8.6 (1.2)	51.4	.2	7.8 (1.1)	50.3	.2
Hospital inpatient care	Gamma	1376.8 (141.8)	94.3	14.6	1131.2 (145.3)	60.6	18.7
Productivity losses	Gamma	112.0 (16.2)	47.8	2.3	41.6 (10.7)	15.1	2.8
Health state							
Successful control	Gamma	37.7 (11.2)	11.3	3.3	40.3 (12.5)	10.4	3.9
–GP		35.1 (9.6)	9.1	3.2	28.2 (11.8)	5.7	4.9
–RNS		35.6 (10.5)	13.3	2.9	42.4 (11.9)	12.7	3.3
–pulmonologist		56.7 (19.8)	8.1	6.9	55.7 (18.1)	9.5	5.9
Suboptimal control	Gamma	102.3 (48.7)	4.4	23.2	68.9 (33.1)	4.3	15.9
–GP		91.3 (42.7)	3.5	22.7	54.1 (31.0)	3.0	17.8
–RNS		99.8 (48.2)	4.8	22.0	66.6 (29.4)	5.1	13.0
–pulmonologist		145.5 (67.8)	4.1	33.4	121.2 (63.1)	3.7	32.9
Primary care managed exacerbation	Gamma	184.5 (53.1)	12.1	15.3	107.7 (37.9)	8.1	13.3
–GP		145.7 (43.4)	11.3	12.9	94.0 (36.1)	6.8	13.9
–RNS		190.9 (52,1)	13.4	14.2	98.1 (32.4)	9.2	10.7
–pulmonologist		241.3 (83.7)	8.3	29.0	206.1 (77.2)	7.1	28.9
Hospital managed exacerbation	Gamma	1673.3 (182.9)	83.7	20.0	1280.5 (153.7)	69.4	18.4
–GP		1153.1 (136.4)	71.5	16.1	1048.1 (141.6)	54.8	19.1
–RNS		1690.4 (183.7)	84.7	20.0	1168.5 (139.9)	69.8	16.7
–pulmonologist		2861.0 (288.2)	98.5	29.0	2578.3 (273.3)	89.0	29.0

[a]Parameters of distribution (alpha, beta) solved using methods of moments fitting, using the mean (SE) derived from the trial data.
[b]Gamma distribution is constrained on the interval zero to positive infinity.
GP, general practitioners; RNS, respiratory nurse specialist.

Supplemental Table 4. Utilities Associated with Each Health State in Usual Care and Disease Management

		Usual care			Disease management		
Health state	Distribution[a]	Mean (SE)	Alpha	Beta	Mean (SE)	Alpha	Beta
Successful control	Beta[b]	.75 (.03)	155.50	51.83	.80 (.03)	141.42	35.36
–GP		.77 (.04)	84.46	25.23	.79 (.04)	81.12	21.56
–RNS		.75 (.03)	155.50	51.83	.82 (.03)	133.66	29.34
–pulmonologist		.70 (.03)	162.63	69.70	.72 (.03)	160.56	62.44
Suboptimal control	Beta	.73 (.03)	159.14	58.86	.74 (.02)	355.20	124.80
–GP		.77 (.03)	159.14	58.86	.73 (.03)	159.14	58.86
–RNS		.72 (.03)	160.56	62.44	.75 (.02)	350.81	116.94
–pulmonologist		.69 (.04)	91.55	41.13	.71 (.03)	161.72	66.06
Primary care managed exacerbation	Beta	.67 (.02)	369.67	182.08	.71 (.04)	90.66	37.03
–GP		.71 (.02)	364.76	148.99	.69 (.04)	91.55	41.13
–RNS		.66 (.02)	369.60	190.40	.73 (.04)	89.20	32.99
–pulmonologist		.62 (.03)	161.68	99.10	.67 (.05)	58.58	28.86
Hospital managed exacerbation	Beta	.66 (.04)	91.91	47.35	.63 (.05)	58.11	34.13
–GP		.69 (.04)	91.55	41.13	.62 (.06)	39.96	24.49
–RNS		.65 (.04)	91.77	49.42	.64 (.05)	58.34	32.82
–pulmonologist		.60 (.05)	57.00	38.00	.57 (.06)	38.24	28.85

[a]Parameters of distribution (alpha, beta) solved using methods of moments fitting using the mean (SE) derived from the trial data.
[b]Beta distribution is constrained on the interval zero to one.



Supplemental Figure 1. Cost-effectiveness acceptability curves for the disease management strategy comparing the base case model and the model including productivity costs. QALY, quality-adjusted life-year.