



# **Using the ENABLE Technologies: What are the Cost-Benefit Indications?**

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## Background to the Cost-Benefit Analysis

- **Brief introduction to the Methodology**
  - Why use a cost-benefit analysis?
  - Devised from “scratch” within the project based on an extensive literature review
  
- **Based on existing instruments to collect data?**
  - Resource Utilisation in Dementia Care

*(Wimo, A., Wetterholm, L., Mastey, V., Winbald, B. (1998). Evaluation of the healthcare resource utilisation and caregiver time in anti-dementia drug trials – a quantitative battery. In: Wimo, A., Jönsson, B., Karlsson, G., & Winblad, B. (Eds). Health economics of dementia. John Wiley & Sons Ltd, Chichester )*
  - SIVA Costs Analysis Instrument

*(Andrich, R. (2000). The SCAI instrument: measuring costs of individual assistive technology programmes. <http://www.siva.it>)*



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## Overview of cost-benefit presentation

- **General Indicators of Costs and Benefits**
  - Benefits: e.g. usefulness, satisfaction, recommendation etc.
  - Costs: e.g. willingness to pay
  
- **Actual Costs**
  - Technology price, installation and training costs
  - Other social cost-related data
    - time spent in hospital; time lost from work; etc.



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## Overview of cost-benefit presentation

- **Actual Benefits**
  - Number of positive outcomes: individual, family, and community level
  - Specific outcomes: different outcomes for each device, but ‘support for independence’ and ‘reduce emotional burden’ are common to all devices
  - Expectations vs. Outcomes (baseline vs. after three months)
    - e.g. number of positive outcomes, support for independence, reduce emotional burden, device-specific positive outcomes
- **Cost-Benefit Qualitative Reports**
  - User reports related to costs and benefits



### Device \* Nationality \* Completer Crosstabulation

Count

Completer			Nationality					Total
			Norway	Finland	Ireland	U.K.	Lithuania	
completer	Device	calendar	8	8	6	10	5	37
		lamp			3	2		5
		gas cooker monitor					1	1
		locator	3	6	5	1	4	19
		telephone	4	3	6			13
		careousel	5					5
	Total		20	17	20	13	10	80
drop out	Device	calendar	3	1		9		13
		lamp		3	3	3		9
		gas cooker monitor			3	3	1	7
		locator	1	5	6	4	1	17
		careousel	1					1
		Total		5	9	12	19	2



## General Indicators of Costs and Benefits (after three months)

Cost-benefit indicator	Yes %	No %
Have you (individual) used the device?	89.2	10.8
Has the device been useful for you (individual) or not?	87.0	13.0
Overall, are you (individual) satisfied with the device?	88.6	11.4
Would you (individual) recommend the device to a friend?	87.1	12.9
Do you (carer) think the device has been useful for pwd?	77.8	22.2
Overall, are you (carer) satisfied with the device?	90.1	9.9
Would you (carer) recommend the device to other carers?	94.5	5.5
Would you (carer) be willing-to-pay for the device?	81.3	18.7



**Device \* Have you/pwd used the device (T3) Crosstabulation**

			Have you/pwd used the device (T3)		Total
			yes	no	
Device	calendar	Count	33	1	34
		% within Device	97.1%	2.9%	100.0%
	lamp	Count	4		4
		% within Device	100.0%		100.0%
	gas cooker monitor	Count	1		1
		% within Device	100.0%		100.0%
	locator	Count	13	5	18
		% within Device	72.2%	27.8%	100.0%
	telephone	Count	11	1	12
		% within Device	91.7%	8.3%	100.0%
	careousel	Count	4	1	5
		% within Device	80.0%	20.0%	100.0%
Total		Count	66	8	74
		% within Device	89.2%	10.8%	100.0%

*"I love it! I can just open my eyes and look at it and it tells me when it is...at night, I can turn my head and sleep again." (Night and Day Calendar – Person with Dementia)*



**Device \* Has the device been useful or not (T3) Crosstabulation**

			Has the device been useful or not (T3)		Total
			useful	not useful	
Device	calendar	Count	30	2	32
		% within Device	93.8%	6.3%	100.0%
	lamp	Count	4		4
		% within Device	100.0%		100.0%
	gas cooker monitor	Count	1		1
		% within Device	100.0%		100.0%
	locator	Count	10	6	16
		% within Device	62.5%	37.5%	100.0%
	telephone	Count	11		11
		% within Device	100.0%		100.0%
	careousel	Count	4	1	5
		% within Device	80.0%	20.0%	100.0%
Total		Count	60	9	69
		% within Device	87.0%	13.0%	100.0%

*“Excellent! I can’t remember the numbers and all I have to do is press the picture.”*  
 (Picture Telephone – Person with Dementia)





**Device \* Overall, are you/pwd satisfied with device (T3) Crosstabulation**

			Overall, are you/pwd satisfied with device (T3)		Total
			yes	no	
Device	calendar	Count	31	2	33
		% within Device	93.9%	6.1%	100.0%
	lamp	Count	4		4
		% within Device	100.0%		100.0%
	gas cooker monitor	Count	1		1
		% within Device	100.0%		100.0%
	locator	Count	11	5	16
		% within Device	68.8%	31.3%	100.0%
	telephone	Count	10	1	11
		% within Device	90.9%	9.1%	100.0%
	careousel	Count	5		5
		% within Device	100.0%		100.0%
Total		Count	62	8	70
		% within Device	88.6%	11.4%	100.0%

*“Our family is very thankful for this product. This product solved our biggest problem.”*

(Gas Cooker Monitor – Carer)



**Device \* Would you/pwd recommend the device to friend (T3) Crosstabulation**

			Would you/pwd recommend the device to friend (T3)		Total
			yes	no	
Device	calendar	Count	31	2	33
		% within Device	93.9%	6.1%	100.0%
	lamp	Count	3	1	4
		% within Device	75.0%	25.0%	100.0%
	gas cooker monitor	Count	1		1
		% within Device	100.0%		100.0%
	locator	Count	12	4	16
		% within Device	75.0%	25.0%	100.0%
	telephone	Count	10	1	11
		% within Device	90.9%	9.1%	100.0%
	careousel	Count	4	1	5
		% within Device	80.0%	20.0%	100.0%
Total		Count	61	9	70
		% within Device	87.1%	12.9%	100.0%

*“Mother is much more self-confident, calmer, our relationships are better” (Night and Day Calendar- Carer)*



**Device \* Would you be willing to pay for device (T3) Crosstabulation**

			Would you be willing to pay for device (T3)		Total
			yes	no	
Device	calendar	Count	28	7	35
		% within Device	80.0%	20.0%	100.0%
	lamp	Count	2	2	4
		% within Device	50.0%	50.0%	100.0%
	gas cooker monitor	Count	1		1
		% within Device	100.0%		100.0%
	locator	Count	13	5	18
		% within Device	72.2%	27.8%	100.0%
	telephone	Count	13		13
		% within Device	100.0%		100.0%
	careousel	Count	4		4
		% within Device	100.0%		100.0%
Total		Count	61	14	75
		% within Device	81.3%	18.7%	100.0%

*"I can find my walking stick and keys myself." (Locator - Person with Dementia)*



## Actual Technology Costs

Device	Actual cost	Plug 'n play	Installation & training cost	Total finished cost
Calendar	€219	✓	€nil	<b>€219</b>
Lamp	€135	✓	€nil	<b>€135</b>
Gas Cooker Monitor	€900	x	€100	<b>€1000</b>
Locator	€150	✓	€nil	<b>€150</b>
Telephone	€37	✓	€nil	<b>€37</b>
Careousel	€142	✓	€nil	<b>€142</b>

*"It helps me live with my illness."* (Night and Day Calendar – Person with Dementia)



## Maximum amount carer willing-to-pay in euro (after 3 months)

Device	Minimum	Maximum	Mean	Mode	Actual cost
Calendar	€10	€187	€41.74	€20	€219
Lamp	€10	€15	€12.50	€10	€135
Gas Cooker Monitor	€150				€1000
Locator	€10	€200	€113.55	€200	€150
Picture Telephone	€20	€125	€64.08	€50	€37
Careousel	€22	€62	€33.50	€25	€142

*“Just knowing that it's there and it works otherwise there's a bit of a panic when things get lost” (Locator - Carer)*



## Technology costs – Carer help with product (after 3 months)

- Average number of total hours carer spent helping person with the product was 2.2 (between T2 and T3 visit – nine weeks)
- Multiply this by the Gross National Income (GNI) per hour per capita for the five ENABLE countries

Euro	England	Finland	Ireland	Lithuania	Norway
<b>GNI per hour per capita *</b>	€11.53	€10.73	€10.34	€1.65	€17.39
<b>Cost of carer help with the product</b>	€25.36	€23.61	€22.75	€3.63	€38.26

\*Gross National Income - Source: World Development Indicators Database, World Bank April 2004

- This represents a very small extra cost

*“It takes away the stress, saves time. It used to take an hour and a half to find everything before we could start to go...it’s unbelievable.” (Locator – Carer)*



## Social Costs – Hospitalisation (after 3 months)

- Five people were hospitalised  
(between T2 and T3 – nine weeks)
- Multiply this by the cost of one overnight stay in hospital
- For example: Ireland in-patient hospital acute care per night

$5 * €401$  (private care) = €2005.00

$5 * €334$  (semi-private care) = €1670.00

(rates valid from 01.01.04 [www.oasis.ie](http://www.oasis.ie))

- One night stay in an Irish hospital would cover the cost of each of the technologies, with the exception of the gas cooker monitor
- Hypothetical saving from the use of technology





## Social Costs – time lost from work

- Total number of days lost from work was 6 (between T2 and T3 visit – nine weeks)
- Multiply this by cost of one day of lost work (6 \* based on GNI data 7 hour work-day)

Euro	England	Finland	Ireland	Lithuania	Norway
<b>GNI per capita per day</b>	€80.71	€75.11	€72.38	€11.55	€121.73
<b>Cost of lost work time</b>	€484.26	€450.66	€434.28	€69.30	€730.38

\*Source: World Development Indicators Database, World Bank April 2004

- Compare to the cost of the ENABLE technologies – becomes clearer how much technology could save economies, potentially.

*"I feel very satisfied I could try this monitor. We are telling all our friends and relatives about this."* (Gas Cooker Monitor – Person with Dementia)





## Actual Outcome Benefits (after three months)

Number of benefits reported (T3)	One or more %	None %
Number of positive outcomes at personal level	74.3	25.7
Number of positive outcomes at family level	60.8	39.2
Number of positive outcomes at community level	38.2	61.8

*"I found my keys a couple of times. It is fun for my grandchildren too."* (Locator - Person with Dementia)



**Device \* Number of positive outcomes (pwd level) (T3) Crosstabulation**

			Number of positive outcomes (pwd level) (T3)				Total
			.00	1.00	2.00	3.00	
Device	calendar	Count	5	6	7	16	34
		% within Device	14.7%	17.6%	20.6%	47.1%	100.0%
	lamp	Count	3	1		1	5
		% within Device	60.0%	20.0%		20.0%	100.0%
	gas cooker monitor	Count				1	1
		% within Device				100.0%	100.0%
	locator	Count	9	2	3	3	17
		% within Device	52.9%	11.8%	17.6%	17.6%	100.0%
	telephone	Count	2	4	1	5	12
		% within Device	16.7%	33.3%	8.3%	41.7%	100.0%
	careousel	Count		5			5
		% within Device		100.0%			100.0%
Total		Count	19	18	11	26	74
		% within Device	25.7%	24.3%	14.9%	35.1%	100.0%

*"I know that I will avoid accidents with my cooker."* (Gas Cooker Monitor – Person with Dementia)



**Device \* Number of positive outcomes (family level) (T3) Crosstabulation**

			Number of positive outcomes (family level) (T3)				Total
			.00	1.00	2.00	3.00	
Device	calendar	Count	13	10	6	5	34
		% within Device	38.2%	29.4%	17.6%	14.7%	100.0%
	lamp	Count	4			1	5
		% within Device	80.0%			20.0%	100.0%
	gas cooker monitor	Count			1		1
		% within Device			100.0%		100.0%
	locator	Count	8	6	2	1	17
		% within Device	47.1%	35.3%	11.8%	5.9%	100.0%
	telephone	Count	4	5	3		12
		% within Device	33.3%	41.7%	25.0%		100.0%
	careousel	Count		2	1	2	5
		% within Device		40.0%	20.0%	40.0%	100.0%
Total		Count	29	23	13	9	74
		% within Device	39.2%	31.1%	17.6%	12.2%	100.0%

*“It is very practical, I must say. It regulates and tells me when it’s time for me to take the pills.” (Careousel – Person with Dementia)*



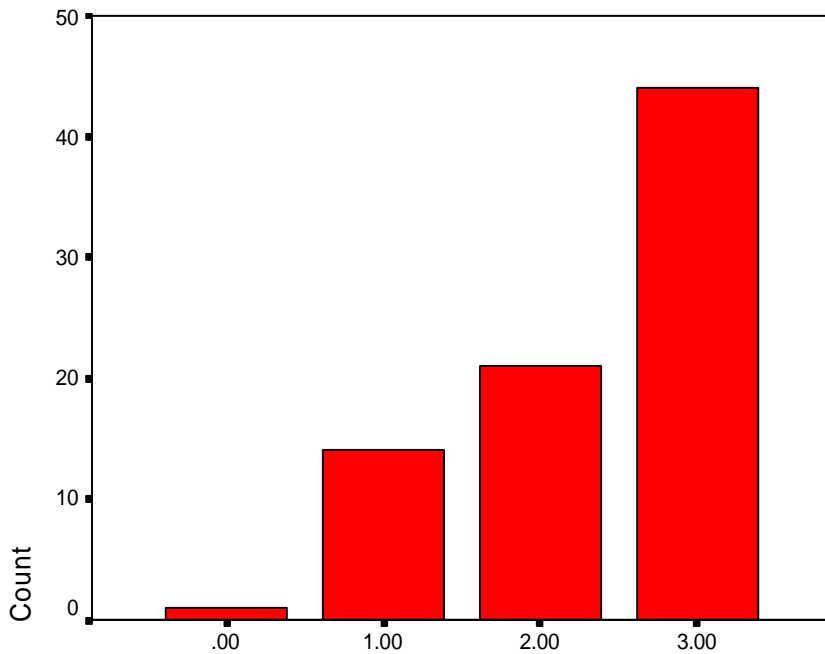
**Device \* Number of positive outcomes (community level) (T3) Crosstabulation**

			Number of positive outcomes (community level) (T3)				Total
			.00	1.00	2.00	3.00	
Device	calendar	Count	17	11		2	30
		% within Device	56.7%	36.7%		6.7%	100.0%
lamp	Count	4	1			5	
	% within Device	80.0%	20.0%			100.0%	
gas cooker monitor	Count				1	1	
	% within Device				100.0%	100.0%	
locator	Count	11	4	1		16	
	% within Device	68.8%	25.0%	6.3%		100.0%	
telephone	Count	6	5			11	
	% within Device	54.5%	45.5%			100.0%	
careousel	Count	4	1			5	
	% within Device	80.0%	20.0%			100.0%	
Total	Count	42	22	1	3	68	
	% within Device	61.8%	32.4%	1.5%	4.4%	100.0%	

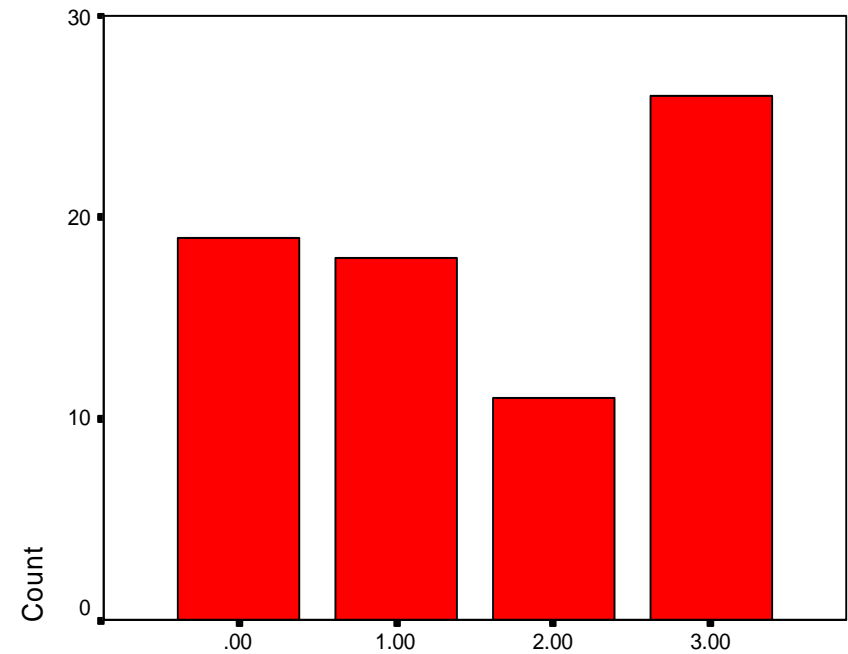
*"It's handy if you were getting up."* (Lamp – Person with Dementia)



## Expectations vs. Outcomes (baseline / completer data) Individual Level for the Person with Dementia



Number of positive expectations (pwd level) (T0)

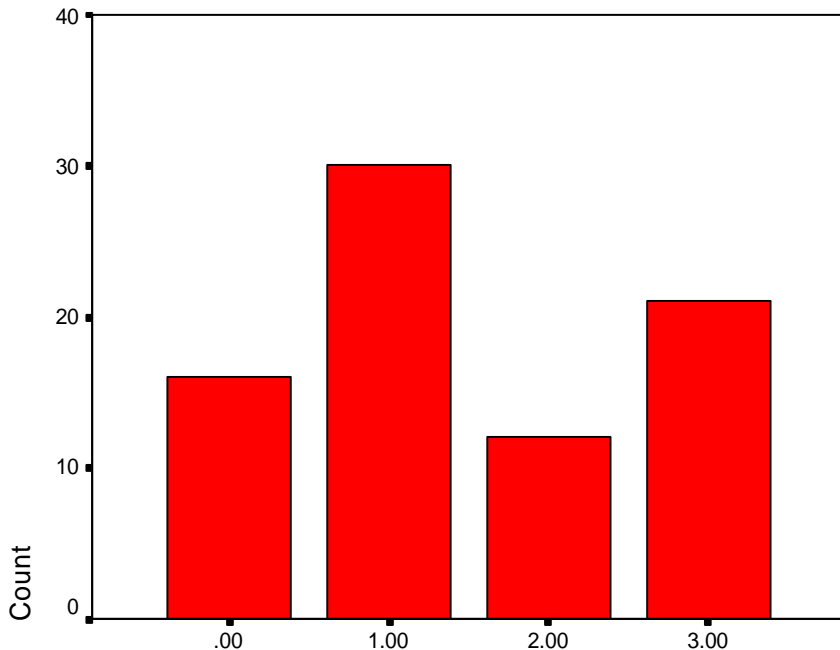


Number of positive outcomes (pwd level) (T3)

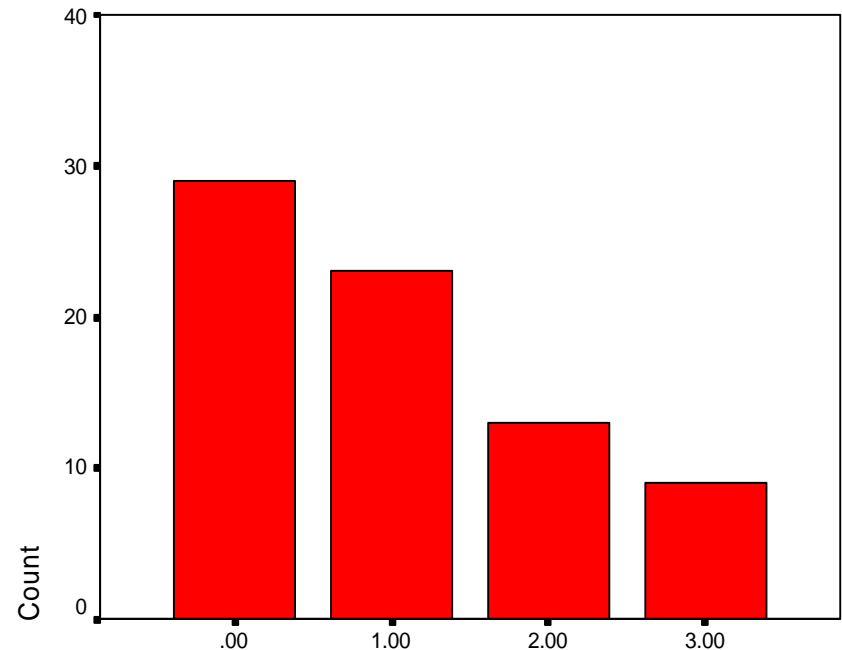
*"I find it amusing. It beeps."* (Careousel – Person with Dementia)



## Expectations vs. Outcomes (T0 vs. T3 data) for the family



Number of positive expectations (family level) (T0)

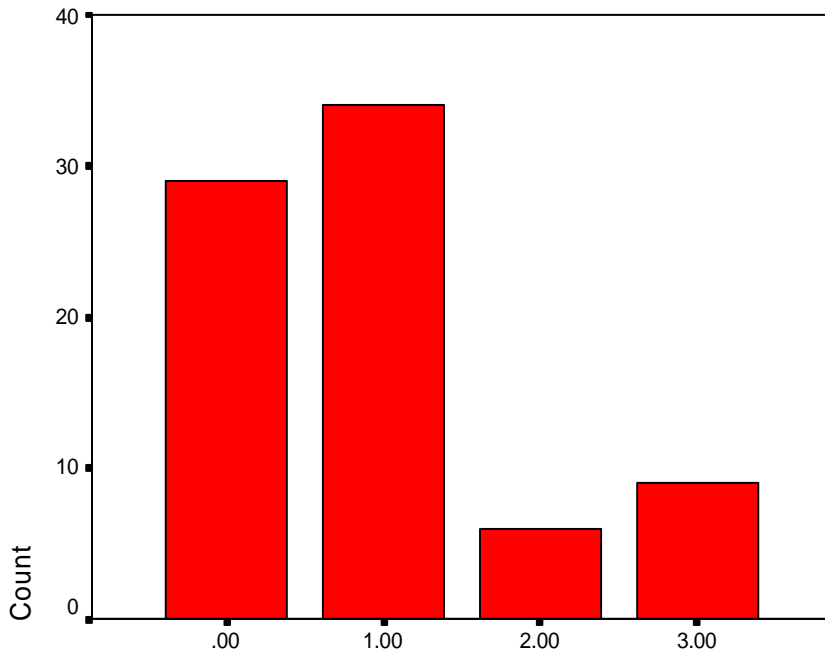


Number of positive outcomes (family level) (T3)

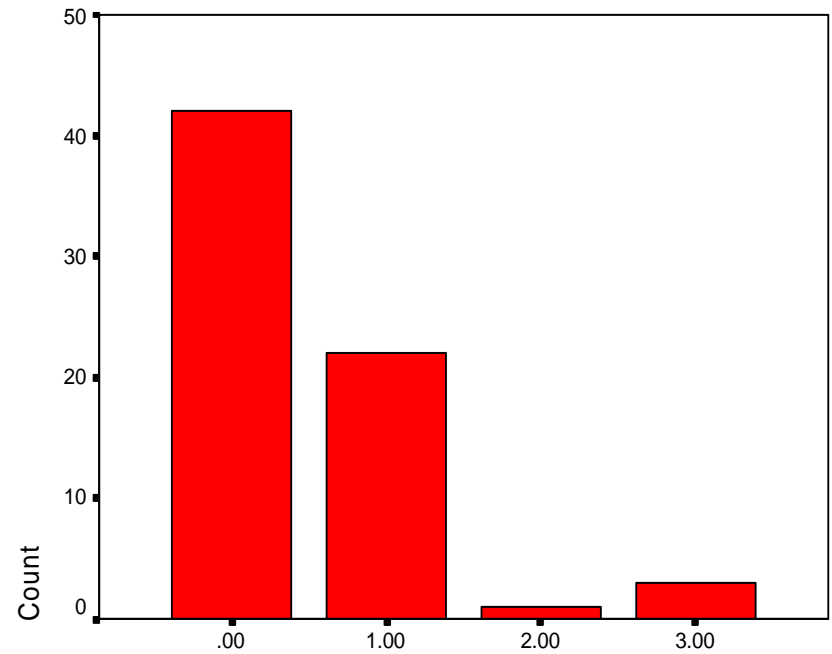
*“People spend more time talking to her now when they come in rather than searching for lost items.” (Locator – Carer)*



## Expectations vs. Outcomes (T0 vs. T3 data) for the community



Number of positive expectations (community) (T0)



Number of positive outcomes (community level) (T3)

*"It means there is something else he can do without asking someone else."*

(Picture telephone – Carer)



## Specific Outcome Benefits (after three months)

Specific positive outcomes (T3) common across devices	Yes %	No/not ticked %
Outcome to support independence	47.3	52.7
Outcome to support reduce general emotional burden from worry for family	35.1	64.9

*"It saves my nerves when I don't have to answer all the time to enquiries about the date."* (Night and day calendar - Carer)





## Specific positive outcome to support independence

Crosstab

			Outcome to support independence (T3)		Total
			yes	no /not ticked	
Device	calendar	Count	19	15	34
		% within Device	55.9%	44.1%	100.0%
	lamp	Count	2	2	4
		% within Device	50.0%	50.0%	100.0%
	gas cooker monitor	Count	1		1
		% within Device	100.0%		100.0%
	locator	Count	3	14	17
		% within Device	17.6%	82.4%	100.0%
	telephone	Count	8	5	13
		% within Device	61.5%	38.5%	100.0%
	careousel	Count	2	3	5
		% within Device	40.0%	60.0%	100.0%
Total		Count	35	39	74
		% within Device	47.3%	52.7%	100.0%

*"I did in a way (find it useful) but I'd forget to use it. I'm getting too old for these fancy things."* (Locator – Person with Dementia)



## Specific positive outcome to reduce worry for the family

Crosstab

			Outcome to reduce general emotional burden from worry for family (T3)		Total
			yes	no /not ticked	
Device	calendar	Count	11	23	34
		% within Device	32.4%	67.6%	100.0%
	lamp	Count		4	4
		% within Device		100.0%	100.0%
	gas cooker monitor	Count	1		1
		% within Device	100.0%		100.0%
	locator	Count	5	12	17
		% within Device	29.4%	70.6%	100.0%
	telephone	Count	5	8	13
		% within Device	38.5%	61.5%	100.0%
	careousel	Count	4	1	5
		% within Device	80.0%	20.0%	100.0%
Total		Count	26	48	74
		% within Device	35.1%	64.9%	100.0%

*"She is safe if she gets out of bed at night." (Lamp - Carer)*



## Case report from Ireland

“The item locator was used by my mother to find her keys to open the door to let me in. This took about 2 minutes. Normally she would have to open the garage door and then we would spend at least 30 minutes looking for keys ...

We also used it to find her purse handbag and wallet, this used to take about an hour before we could go anywhere but now it takes all of five minutes.

I find it wonderful as sometimes my patience wears thin and I get quite stressed before we leave the house.

My mothers mood was also better as she did not have to try and remember where everything was and so did not realise how forgetful she was.

I would recommend it for anyone with memory problems. Anyone I have told about it wants to buy it for their mother, father and some even for themselves”.

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## Case report from Norway

“...was to take medication twice a day and forgot about the pills in the evening. Home services came to give her the pills every night. She felt this was a waste of time and she really wanted to manage to take the pills on her own.

Given the Careousel -

PWD manages to take the pills on her own by using the careousel. She thinks the product is nice and she is impressed and fascinated by how she can be helped by it.

She was very happy to take the pills on her own and she complained that before she got this box, she had to rush to get ready to welcome the home nurses and she was happy she didn't need to do that anymore”.

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## Case report from Lithuania

“Problems were reported with orientation in day and night time. PWD was asking all the time what time it is or what day it is and creating a negative relationship with her daughter, who is very tired because of this asking and not getting enough sleep at night. Given the Night and Day Calendar.

The product is useful for all family because there are many positive things after installation. PWD does not feel so ignorant of time and the carer can rest at night because mother does not wander at night so often. PWD and family carers are very satisfied with the product; they bring it with them when going on weekend visits to other family members.

Carer noticed some other positive benefits, e.g., “mother became livelier, laughs more often; she is not so self-conscious. When PWD did not have the calendar she cried very often”.

PWD reported finding the calendar very useful too – “earlier she felt herself lost and unintelligent because of not managing time”.

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*“It’s not really used enough. We haven’t lost her handbag yet!”*

*(Locator – Carer)*