

Socio-economic assessment of Assistive Technology in service delivery practice

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The Assistive Technology cost side: how to measure the social cost of AT interventions

Renzo Andrich

Polo Tecnologico, Fondazione Don Carlo Gnocchi Onlus, Milano
renzo.andrich@siva.it



The cost of AT:

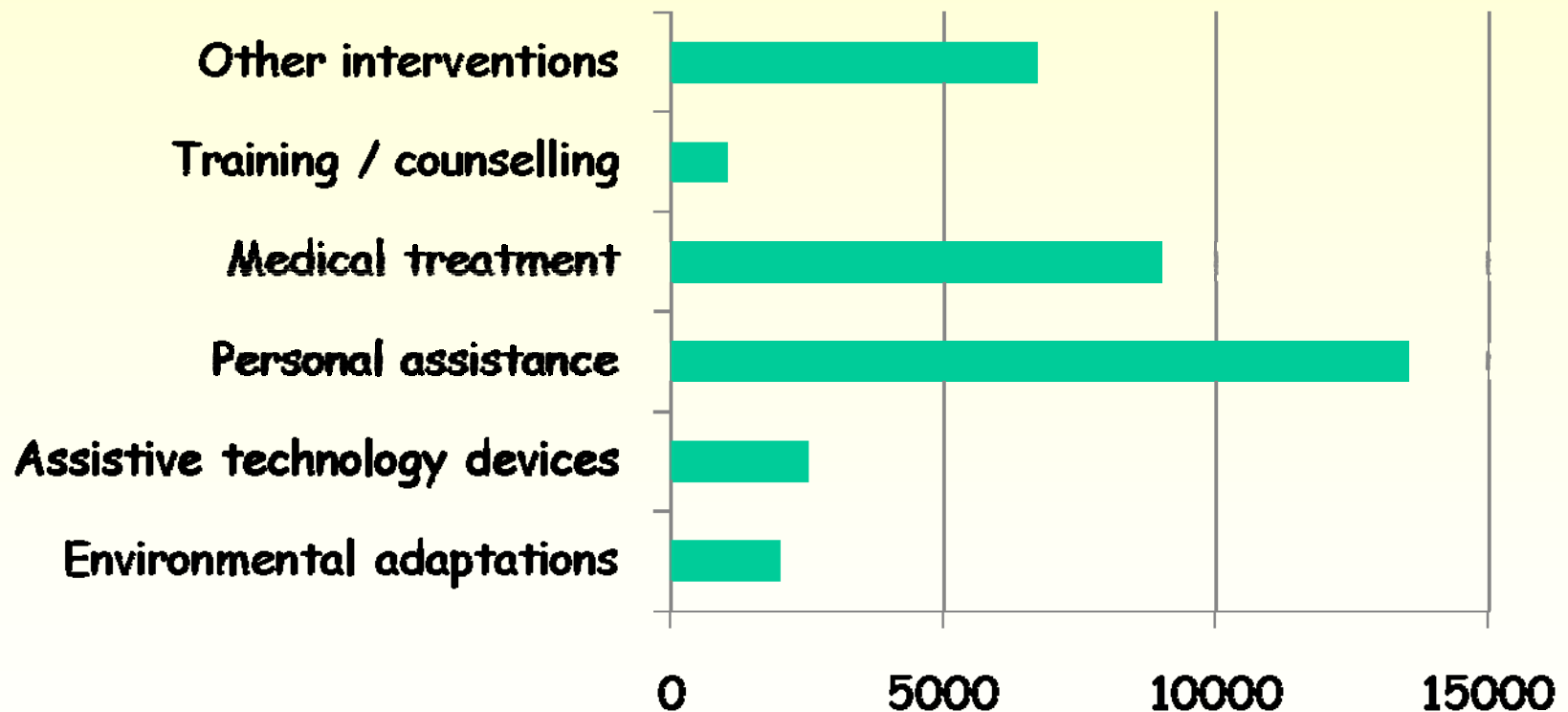
can it be separated from the other components of the overall intervention cost ?

1. In most cases, the provision of AT is a specific intervention within a wider individualised rehabilitation, educational, or assistance programme



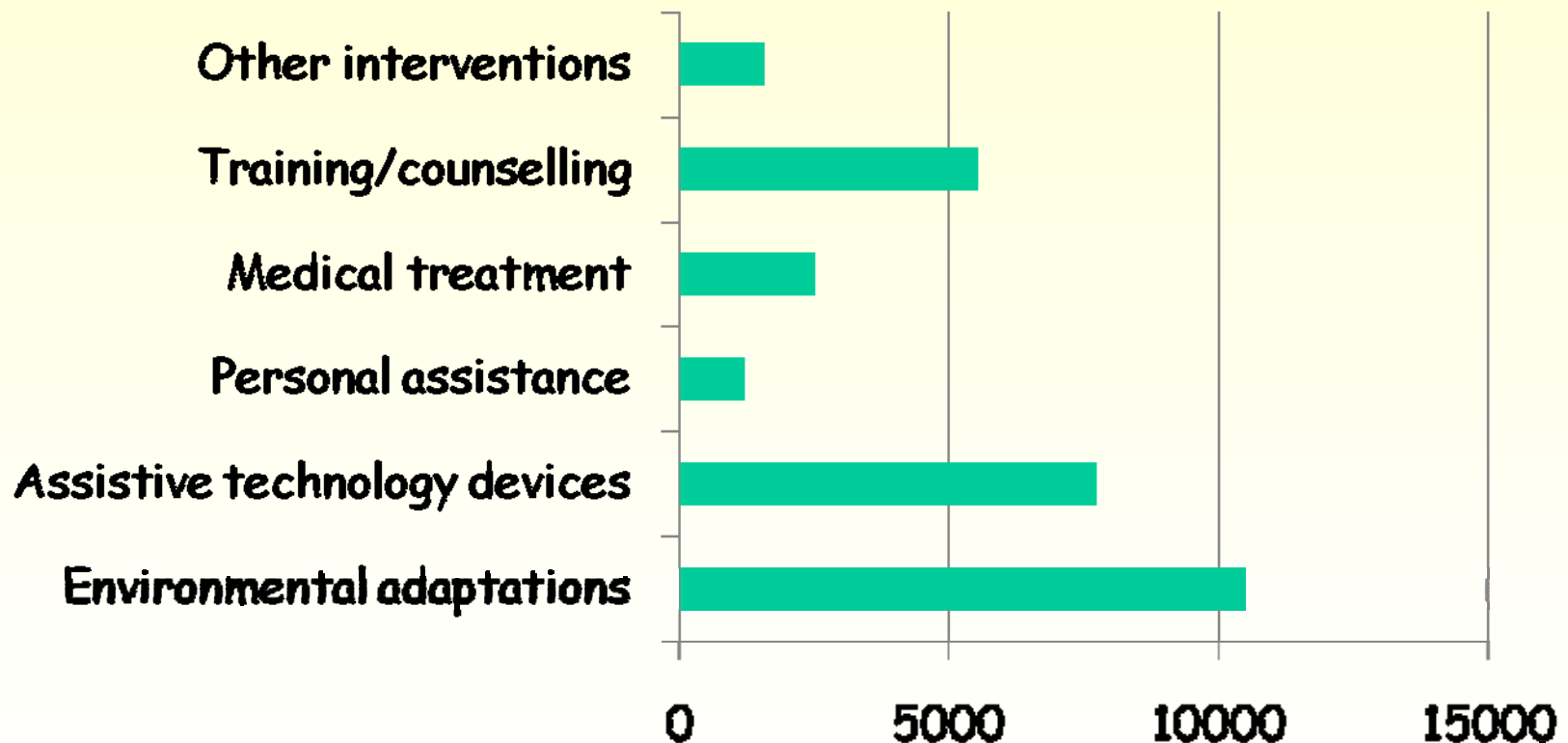
Cost of the individual programme (simulation 1)

Total cost € 34.700



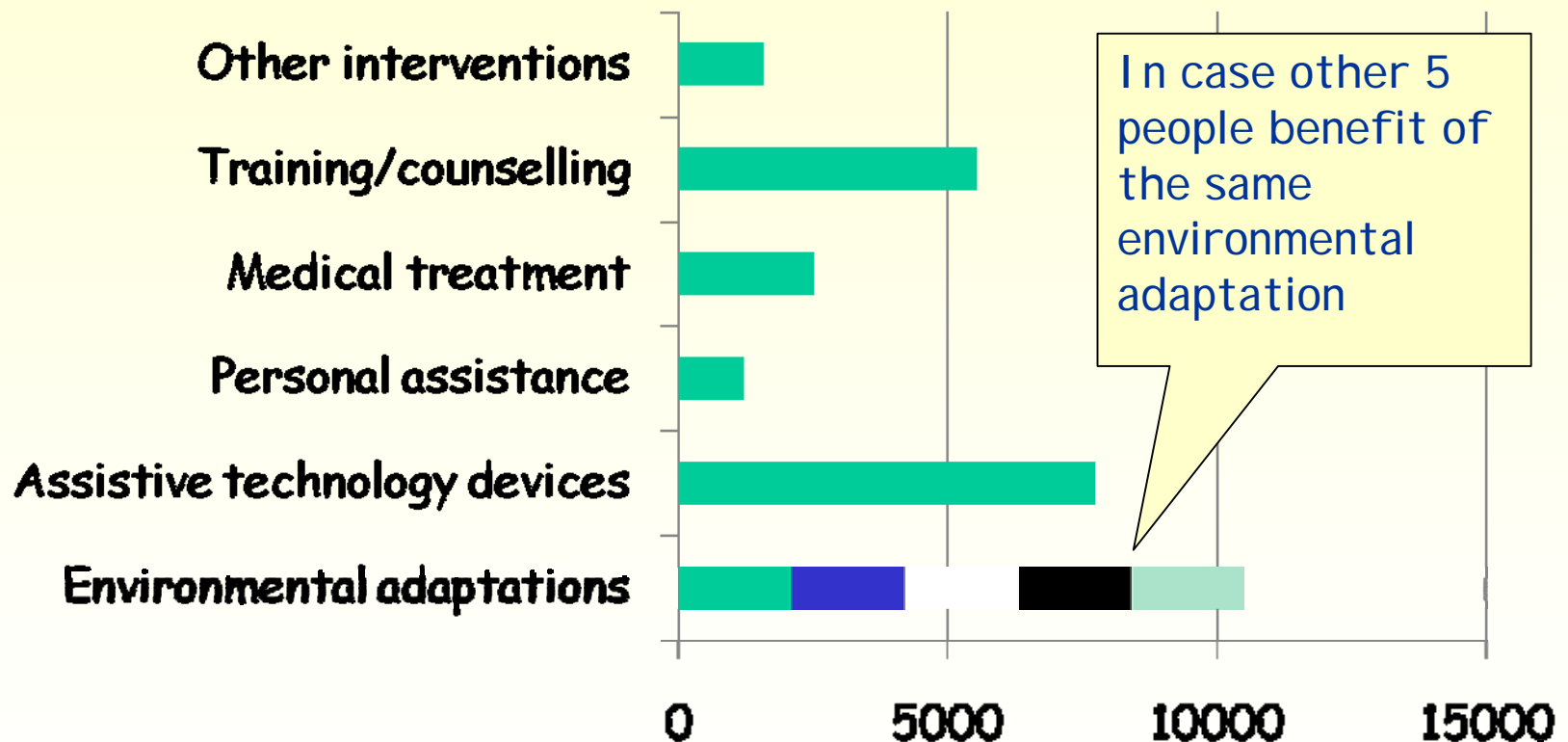
Cost of the individual programme (simulation 2)

Total cost € 28.950



Cost of the individual programme (simulation 3)

Total cost € 20.550



AT purchase Vs AT intervention
*is the purchase price an appropriate indicator of
the economic impact the AT device ?*

2. The purchase price of an AT device is a component of the cost of the overall process associated to that device
3. Both the product and the process have lifecycles: costs should be measured over time



The ImEcAP model of AT cost

Cost of the individual AT intervention



C

Cost of the AT product

+

Cost of the process associated to the product

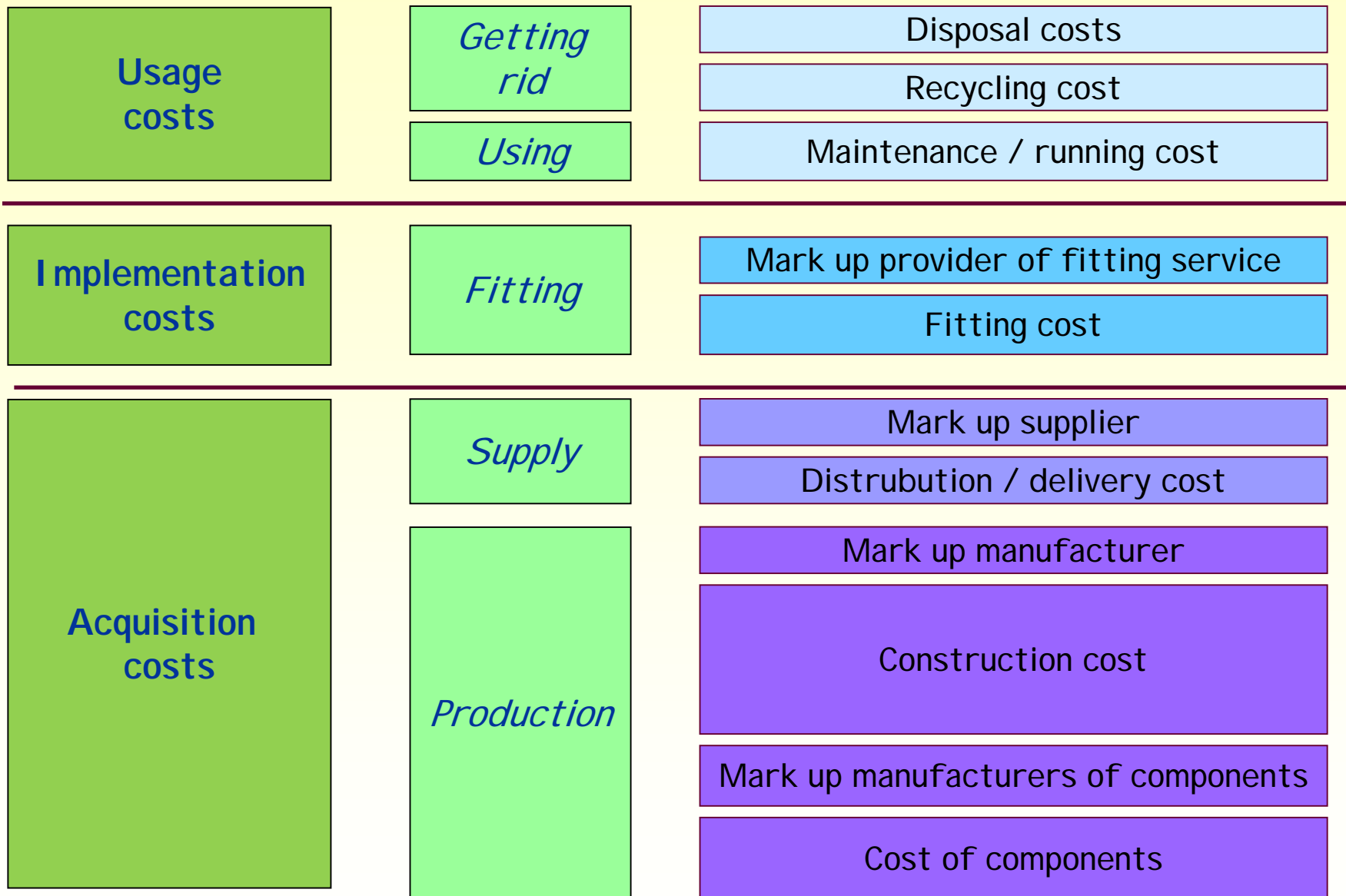


K



$$S = C + K$$

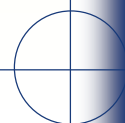
ImEcAP model of the AT product cost



ImEcAP model of the AT process cost

(partially adapted from the HEART Study - 1995)

		Professional resources	User resources
Usage costs	Follow-ups		
	Human assistance		
Implementation costs	Training		
	Delivery/fitting		
Acquisition costs	Selection of products		
	Authorisation		
	Selection of solution		
	Assessment		
	Initiative		



Cost containment:

Acting on the process or on the product ?



User: Giovanni. Age: 8. AT device: Children walker (ISO 12.06.09)
Retail price 2.278,60 € - negotiated price 1936,81

acquisition	Professional resources	411,97
sub-process	User resources	93,60
(30 days)	Subtotal	505,57
Implementation	Professional resources	78,55
sub-process	User resources	32,00
(10 days)	Subtotal	110,55
Usage	Professional resources	14,35
sub-process	User resources	8,00
	Subtotal	22,35
Overall social cost of the process		638,46

What is the appropriate indicator of the cost of an AT intervention?

4. Costs may be borne by various actors: hence we must look at the social cost (sum of the costs borne by all actors)
5. Some costs should be considered fixed (independent on the specific AT selected), other marginal (dependent on the specific AT selected)
6. The cost of an AT intervention should be compared with the cost of “non intervention”: hence we must look at the additional cost



SOCI AL COST

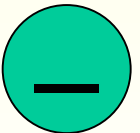
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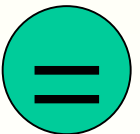
MARGI NAL
COSTS

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COSTS

COST OF INTERVENTION



COST OF NON-INTERVENTION



ADDITIONAL SOCIAL COST



SCAI

(Siva Cost Analysis Instrument)

- Helps professionals and clients estimate and compare the additional social costs of the various AT solutions able to solve a particular problem of a client
- Theoretical foundation: the CERTAIN Project (1994-96) within the EU TIDE programme
- Developed, improved and validated within national research programmes of the Don Gnocchi Foundation
- Latest version:
 - Andrich R, Caracciolo A:Analysing the cost of individual assistive technology programmes. *Disability and Rehabilitation: Assistive Technology*, 2007; 2(4):207-234

An example of SCAI findings

(purpose of the intervention: to allow the client to get into and out of his flat, located at the first floor)



Solution (4 alternatives)	Side-mounted stairclimber	Vertical conveyor	Mobile stairclimber	Two helpers
Purchase cost	9.880	15.600	3.867	
Additional social cost in 10 years	21.780	18.650	61.324	86.400
<i>Expenses by the user</i>	<i>4.128</i>	<i>7.591</i>	<i>27.200</i>	<i>43.200</i>
<i>Expenses borne by L.H.Authority</i>	<i>-</i>		<i>9.133</i>	<i>-</i>
<i>Expenses borne by the Municipality</i>	<i>4.407</i>	<i>5.299</i>	<i>27.000</i>	<i>43.200</i>
<i>Fiscal benefits</i>	<i>3.645</i>	<i>5.760</i>		
Overall expense in 10 years	12.180	18.650	63.333	86.400

What is “non-intervention” ?

- Option 1:
being confined in the flat
 - What are the consequences ?
 - Is it reasonable ?
 - Is it ethically acceptable ?

- Option 2:
relying only on human help
 - two helpers carrying the person up and down

- Option 3:
??



In case "two helpers" is considered to be the "non intervention"



Solution (4 alternatives)	Side-mounted stairclimber	Vertical conveyor	Mobile stairclimber
Purchase cost	9.880	15.600	3.867
Additional social cost in 10 years	-64.780	-67.750	-25.076
<i>Expenses by the user</i>	4.128	7.591	27.200
<i>Expenses borne by L.H.Authority</i>	-	-	9.133
<i>Expenses borne by the Municipality</i>	4.407	5.299	27.000
<i>Fiscal benefits</i>	3.645	5.760	-
Overall expense in 10 years	12.180	18.650	63.333
	21.790 - 86.400 =	18.650 - 86.400 =	61.324 - 86.400 =

Can the costs of more AT interventions be added up ?

7. If the time sequence of the various AT interventions for the same individuals is known, their additional social costs can be added up, leading to the overall additional social cost of the individual AT programme

Example:

Assistive Technology Solution	Resident home helper	Substitute home helper	Mobile stairclimber	Mobile hoist	Total
Purchase cost			3.867	1.343	5210
Additional social cost in 10 years	108.000	17.000	7.324	3.186	135.510
<i>Expenses by the user</i>	<i>84.000</i>		<i>200</i>	<i>500</i>	<i>84.700</i>
<i>Expenses borne by L.H.Authority</i>	-		<i>9.133</i>		<i>9.133</i>
<i>Expenses borne by the Municipality</i>	<i>24.000</i>	<i>17.000</i>		<i>2.686</i>	<i>43.686</i>
<i>Fiscal benefits</i>	-				
Overall expense in 10 years	108.000	17.000	9.333	3.186	137.519

How much does an individual AT programme cost?
OR
How much can we save by means of an individual AT
programme?

- *Sample considered: 31 individual assistive technology programmes (1999-2005), each composed of several interventions*
- *Method: calculation of the additional social cost of each programme (actualised 2006) over a 5-years time span, by using the SCAI instrument*
- *Comparative analysis of results*



Matteo, age 55, ALS

Cost of the individual AT programme

<i>Assistive solution provided</i>	<i>Purchase cost</i>	<i>Cost interv</i>	<i>% equipm</i>	<i>Cost non-int</i>	<i>Additio nal cost</i>	<i>Overall add.cost</i>
Ankle foot orthosis (Molle di Codivilla)	123	652	94%	0	652	
Walking stick (unspecified)	68	152	80%	0	152	
Mobile stairclimber (TGR Jolly)	4,215	20,099	13%	32,400	-12,301	
Manual wheelch. (Meyra Eurochair1850)	994	2,088	86%	0	2,088	
Bathtub seat (unspecified)	120	216	100%	28,800	-28,584	
Electrically adjustable bed (unspecified)	1,020	377	68%	7,680	-7,303	
Commode chair (unspecified)	210	1,008	3%	2,160	-1,152	
Antidecubitus mattress (unspecified)	361	2,974	2%	5,760	-2,786	
Electric hoist (KSP N9603)	681	13,212	1%	25,920	-12,708	
Pushchair (Breezy 341)	986	23,296	1%	0	23,296	-38,646

Costs of the 31 individual AT programmes

	<i>Purchase cost</i>	<i>Cost interv equipment</i>	<i>%</i>	<i>Cost non interv</i>	<i>Additional cost (int.Vs non-int.)</i>	<i>Overall add. cost</i>
<i>Maximum value</i>	45,000	173,243	100%	154,800	173,243	172,261
<i>Minimum value</i>	25	13	1%	0	-129,803	-152,857
<i>Average</i>	3,258	14,022	38%	22,474	-7,044	-24,801
<i>Standard dev.</i>	5,409	19,947	34%	26,685	29,259	65,732



Some conclusions of the Study

- Clinical condition Vs social cost of the AT intervention:
 - *No correlation detected*
- Purchase cost of the AT device Vs social cost of the AT intervention:
 - *Low correlation*
- Type of AT device Vs social cost of the AT intervention:
 - *Low correlation*
- Social cost of non-intervention
 - *Estimation is often difficult*



Overall conclusions

- The purchase price is not a reliable indicator of the cost of the AT intervention
- The additional social cost is a good indicator
- Such cost is highly dependent on contextual factors
- Such cost is inter-related with the other interventions composing the overall individual programme
- AT interventions often decrease the cost of the overall individual programme



Still a long way to go,
but we are progressing..



Thank you for
your attention

