

## **Epilepsy Surgery: better futures or more false economies?**

**An event hosted by the NCYPE  
Champions for Childhood Epilepsy Campaign**

17 November 2010 – Goodenough College, London

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**Over the next 10 years the NHS has  
the chance to save at least  
£280 million  
AND improve the lives of  
hundreds of children**

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### **Improving access to childhood epilepsy surgery - Lifetime costs estimate**

*Methodology and assumptions*

#### **Introduction**

The National Centre for Young People with Epilepsy (NCYPE) has sought to understand the financial issues associated with a lack of childhood epilepsy surgery. We have created a simple estimate comparing the costs that would be incurred over a defined period of time if a child who is suitable for surgery does not receive that surgery. This is compared with the cost of the surgery itself.

#### **Methodology<sup>1</sup>**

The methodology seeks to examine the cost to the UK of epilepsy surgery and to compare that with the savings directly attributable to the government which could arise from that surgery.

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<sup>1</sup> We are very grateful to an NCYPE volunteer, an economist, who helped to devise the methodology and who conducted the review of research papers to identify the annual direct cost savings.

The methodology takes two scenarios:

- The 'do nothing' scenario where 100 children with epilepsy receive surgery over a year;
- A 'more surgery' scenario where the 400 children who are believed to be able to benefit from epilepsy surgery receive that surgery over a year.

A time period is chosen over which to estimate the cost savings that might be achieved. Although the most appropriate period might be from the age of 18 to the retirement age of 65, much shorter time periods have been considered

In each scenario, the direct cost saving is estimated based on the costs associated with medication, hospital outpatients and admissions, and diagnostic investigations. The assumption on direct costs has been taken from a review of research papers on the subject.

Similarly, for each scenario, the cost savings are estimated from avoiding two forms of benefit payments. The assumption has been made that, with a continuing significant level of seizures and without surgery, children would need to receive Disability Living Allowance and Employment and Support Allowance when they become adults. However, it is recognised that a proportion of children receiving surgery would continue to require those benefits.

The estimates ignore the following potential additional savings that could arise from childhood epilepsy surgery:

- Reduced direct costs and benefits for people who are not seizure-free following surgery but do achieve a reduced seizure frequency;
- The costs of social care services for those with continuing high levels of seizures;
- Supporting living costs (i.e. rent paid by state) for those do have continuing high levels of seizures;
- The costs of early retirement for medical reasons for those with continuing high levels of seizures;
- The costs of Children's and Adolescent Mental Health Services for those with continuing high levels of seizures;
- Other state benefits for those with continuing high levels of seizures, e.g. tax credits, housing benefit;
- The loss of productivity to the UK economy from those with continuing high levels of seizures;
- The additional costs to the state before child reaches adulthood;
- The additional costs which might arise after the period under analysis (e.g. after age 38 for a 20 year analysis)

The analysis does not discount future cash flows, and will therefore slightly underestimate the payback period whilst this is less than 5 years. As the payback period increases, greater errors will arise from not discounting future cash flows.

Sensitivity tests can be undertaken by varying any of the assumptions to understand the impact on the lifetime savings and the payback period.

## Key assumptions

<b>Assumption</b>	<b>Figure</b>	<b>Source</b>
Number of children who could benefit from epilepsy surgery each year	400	Advice from Professor Helen Cross
% seizure free after surgery	70%	Advice from Professor Helen Cross
% with reduced seizure frequency after surgery (over and above % seizure free)	20%	Advice from Professor Helen Cross
Annual direct cost saving per child left seizure free after surgery	£3,928	Review of research papers on cost of illness studies for epilepsy; average of Tetto and Beghi figures for pre-surgery cases, adjusted for currency and inflation.
Disability Living Allowance benefit saving	£1,971 (£18.95 + £18.95 for 52 weeks)	Assumption that, without surgery, when the children become adults they would require the base mobility level allowance and the base care allowance.
Employment & Support Allowance benefit saving	£5,036 (£96.85 per week <sup>2</sup> )	Assumption that, without surgery, the level of continuing seizures would mean that they would not be able to maintain employment
% of children seizure free after surgery who would not require benefits	60%	Advice from Professor Helen Cross
Cost of childhood epilepsy surgery	£20,000	Based on indicative figures for procedure, bed days and out-patients appointments from Great Ormond Street Hospital (£12.4k & £13.7k) increased to allow for investigations

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<sup>2</sup> Recipients of this benefit receive a lower level of payment for the first 13 weeks, but this has been ignored given the length of period under consideration.

## Each year, 300 children miss out on surgery which is likely to be life-changing

**On a purely financial analysis, the initial investment in surgery would be paid back in 3.5 years**

	<i>'Do nothing'</i>	<i>More surgery</i>
Number of children who could benefit	400	400
Number of children receiving surgery	<b>100</b>	<b>400</b>
% (& number) of children post operatively seizure free	70% (70)	70% (280)
% (& number) of children with reduced seizure frequency post operatively	20% (20)	20% (80)
Number of years over which the analysis is to be conducted	20	20
Annual direct cost saving per child now seizure-free after surgery	£3,928	£3,928
Direct cost saving per child over the chosen period	£78,560	£78,560
Total direct cost saving for all children over the chosen period	<b>£ 5,499,200</b>	<b>£21,996,800</b>
Annual DLA and E&SA benefit saving	£7,007	£7,007
DLA and E&SA benefit saving per person over the chosen period	£140,140	£140,140
Proportion of children seizure-free who do not need benefits	60%	60%
Total DLA and E&SA benefit saving over the chosen period	<b>£5,885,880</b>	<b>£23,543,520</b>
Cost of surgery per child	£ 20,000	£ 20,000
Total cost of surgery	<b>£2,000,000</b>	<b>£8,000,000</b>
Net financial saving (direct costs only)	£3,499,200	£13,996,800
<b>Net financial saving (direct + indirect cost saving minus surgery cost)</b>	<b>£9,385,080</b>	<b>£37,540,320</b>
Economic benefit (direct cost only) each year from additional surgery		£10,497,600
'Payback'(from direct costs): Number of years before cost of surgery is 'repaid'		7.3
<b>Economic benefit (direct &amp; indirect cost) each year from additional surgery</b>		<b>£28,155,240</b>
<b>'Payback' (from direct &amp; indirect costs): Number of years before cost of surgery is 'repaid'</b>		<b>3.5</b>

### **Further savings which would arise from additional surgery:**

- Reduced direct costs and benefits for people with reduced seizure frequency
- Cost of social care services
- Early retirement for medical reasons
- Supporting living costs (rent paid by state)
- Children's and Adolescent Mental Health Services
- Other state benefits, e.g. tax credits, housing benefit
- Loss of productivity to the UK economy
- Additional costs before child reaches adulthood
- Additional costs after period of analysis (e.g. after age 38 for a 20 year analysis)

The above analysis does not discount future cash flows and will therefore underestimate the payback period (but only slightly while the period is short)