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BRIEF REPORT

Brief Report: Quantifying the Impact of Autism Coverage on Private Insurance Premiums

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Abstract Many states are considering legislation requiring private insurance companies to pay for autism-related services. Arguments against mandates include that they will result in higher premiums. Using Pennsylvania legislation as an example, which proposed covering services up to $36,000 per year for individuals less than 21 years of age, this paper estimates potential premium increases. The estimate relies on autism treated prevalence, the number of individuals insured by affected plans, mean annual autism expenditures, administrative costs, medical loss ratio, and total insurer revenue. Current treated prevalence and expenditures suggests that premium increases would approximate 1%, with a lower bound of 0.19% and an upper bound of 2.31%. Policy makers can use these results to assess the cost-effectiveness of similar legislation.

Keywords Health services · Insurance · Autistic disorder · Economics

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Introduction

Empirical studies of healthcare expenditures find that those of children with autism spectrum disorders (ASD) range from three to ten times those of other children, depending on the sample and methods (Croen et al. 2006; Leslie and Martin 2007; Liptak et al. 2006; Mandell et al. 2006). Synthetic estimates find even higher increases in relative expenditures, especially when categories such as educational expenditures and labor force participation are taken into account (Ganz 2006; Jarbrink and Knapp 2001). Relative to costs associated with other health conditions that manifest in childhood, the healthcare costs associated with ASD are disproportionately borne by families (Fujiura et al. 1994; Jarbrink 2007; Jarbrink et al. 2003; Krauss et al. 2003) and, in the United States, by the Medicaid system (Krauss et al. 2003), regardless of family income (Birenbaum et al. 1990; Braddock 2002; Walsh et al. 1997).

The dramatic increase in the number of children and adults diagnosed with ASD (Centers for Disease Control and Prevention 2007; Fombonne 2003, 2005), combined with the high cost of their care, has caused many states to consider other alternatives to pay for this care (Shattuck and Grosse 2007). Some states have increased the public contribution to these services. For example, Colorado, Indiana, Kansas, Maine, Maryland, Pennsylvania and Wisconsin, have or are considering Medicaid waivers, which would allow states to use Medicaid funds to pay for services not included in their Medicaid plan, or to cover individuals that otherwise would not be Medicaid eligible. Other states have increased the private contribution to these services. Many private insurance companies severely limit coverage of behavioral health services for individuals with autism or exclude coverage altogether. In response, Arizona, California, Indiana, Kentucky, Louisiana, Mississippi, Pennsylvania, South Carolina, Texas, West Virginia and Wisconsin all recently considered legislation that would mandate private insurance companies to pay for autism-related healthcare services. This legislation has met with varying degrees of success, with legislation not passing in Mississippi, West Virginia or Wisconsin. Successful legislation has varied tremendously in the ages of covered individuals, the types and quantity of covered services, and annual caps on associated expenditures. As of this writing, many other states, including Connecticut, Florida, Illinois, Michigan, Missouri, and Oklahoma, recently have introduced similar legislation.

A major challenge to these insurance mandates has been the concern that they will result in increased premiums for policy holders. Since most policy holders are employers, increases in premiums may be passed onto employees in the form of a net loss of wages or loss of employment, although the effect of mandates on both has been debated in the literature (Collins et al. 2005; Hopkins and Zweifel 2005; Klerman and Goldman 1994; Sommers 2005; Wolaver et al. 2003). Insurance companies therefore have argued that an autism insurance mandate would result in a burdensome rate increase. Autism advocates, on the other hand, have argued that the burden associated with a rate increase would be outweighed by the benefits to individuals with autism and their families.

To help inform the debate surrounding autism insurance mandates, one of the authors (JB) developed an equation to estimate the effect of mandates on premiums, using information easily available on the Internet. In the following, we present the general equation and rationale, and use data from Pennsylvania, which has recently passed legislation, House Bill (HB) 1150, as an example. HB 1150 requires insurance companies to cover healthcare services for children with autism, from birth up to age 21. Specifically mentioned in HB 1150 are behavioral interventions such as applied behavior analysis. Annual per capita expenditures are capped at $36,000.

Methods

Percentage rate impact (%RI) was calculated as a function of the prevalence of autism, which we calculated using a range based on reports of community and treated prevalence. This was multiplied by the number of insured children in Pennsylvania, the average annual medical expenditure for children with autism, which we derived from published studies (see Table 1), and the cost to insurance companies of administering this new mandate. The product of these four numbers was divided by the proportion of revenues from health insurance premiums spent on medical services covered by the plan. This number was then divided by the total revenue to private insurance companies in Pennsylvania. More specifically, we used the formula:

$$\%\mathrm{RI} = \frac{\left(\frac{f}{Sf} \times F\right) \times (\bar{x} \times A) \div \mathrm{MLR}}{\mathrm{PR}}$$

where *f* is number of children in the state with autism, ages 2–20 years. This number was estimated using several strategies, ranging from the treated prevalence observed in recent studies using private insurance billing data (2 per 1,000) to the CDC-estimated prevalence (6.7 per 1,000).

Sf is number of all children in state, ages 2–20 years. This number was abstracted from US Census data.

F is number of insured children in Commonwealth, ages 2–20 years, with non-ERISA exempt healthcare insurance coverage. This number was derived from the percentage of uninsured children and youth living in Pennsylvania as reported by the Centers for Disease Control and Prevention (Cohen and Martinez 2007) and from the percentage of private-sector enrollees that are enrolled in self-insured plans at business firms offering health insurance in Pennsylvania, as reported in the Medical Expenditure Panel Survey (*Medical Expenditure Panel Survey-Insurance Component* 2005). Using these sources, the number of children and youth between the ages of 2 and 20 living in Pennsylvania and covered under state-regulated insurance plans, was estimated at 1.37 million.

$\bar{x}$ is mean annual per capita expenditure for autism-related services. This number was estimated from existing studies of healthcare utilization, and ranged from the $2,900 found by (Croen et al. 2006) to the $36,000 cap proposed by the Pennsylvania legislation. Only estimated annual expenditures of $10,000 and higher are presented here. A summary of this literature is presented in the table.

A is assumed load factor for the first year's administrative and incidental costs associated with the mandate. This number was obtained from insurer comments filed with the Pennsylvania Health Care Cost Containment Council in regard to the implementation of new insurance mandates, and assumed to be 10% of total provider payments attributable to the mandated benefits.

MLR is medical loss ratio. The MLR refers to the proportion of revenues from health insurance premiums spent on medical services covered by the plan. The MLR was calculated by dividing the total medical losses incurred by total premium revenue collected by insurers. The MLR is used to convert increased medical/clinical costs to a revenue requirement needed to encompass both the hard and soft costs attributable to administering health care coverage. An MLR of 85%, considered the industry standard, was used for these calculations (Robinson 1997).

Table 1 Summary of cost and expenditure studies for individuals with autism; all monetary amounts converted to 2006 $[a]

	Data source	Treated prevalence	Sample	Grand total	Medical					
					Total	Inpatient	Meds	Other	School	Other
(Mandell et al. 2006)	Allegheny County, PA Medicaid data 1994–1999	2.0/1,000	334 Children with autism diagnosis	$12,000	$12,000	$8,300	–	$3,700	–	–
(Croen et al. 2006)	Kaiser Permanente, Northern CA 2003–2004	–	3,053 Children with autism diagnosis	$2,900	$2,900	$1,500	$770	$600	–	–
(Liptak et al. 2006)	National sample from MEPS 1997–2000	2.1/1,000	31 Children with autism diagnoses	$7,400	$7,400	$880	$1,170	$5,300	–	
(Leslie and Martin 2007)	Large US self-insured employers 2000–2004	Per 1,000: 0.9 (2000) 1.3 (2001) 1.8 (2002) 2.1 (2003) 1.9 (2004)	256,646 Children diagnosed with a mental disorder 2000–2005	$4,965 (2000) $5,979 (2004)	–	–	–	–	–	–
(Ganz, 2006)	Synthetic estimate	–	–	Lifetime: $3,439,800	Lifetime: $333,000	Lifetime: $39,400	Lifetime: $6700	Lifetime: $286,800	Lifetime: $163,800	Lifetime: $2,943,000
(Jarbrink and Knapp 2001)	Center of Economics data & survey of 250 parents	–	228 Children with autism or high functioning autism (HFA)	Autism: $1,834,600 HFA: $687,200	Autism: $237,500 HFA: $164,000	Autism: $62,200 HFA: $71,800	Autism: $8,000 HFA: $19,400	Autism: $167,300 HFA: $72,900	Autism: $418,600 HFA: $254,100	Autism: $941,000 HFA: $1,400

[a] All studies present average per person annual expenditures, with the exception of Ganz (2007) and Jarbrink and Knapp (2001), which present average per person lifetime expenditures

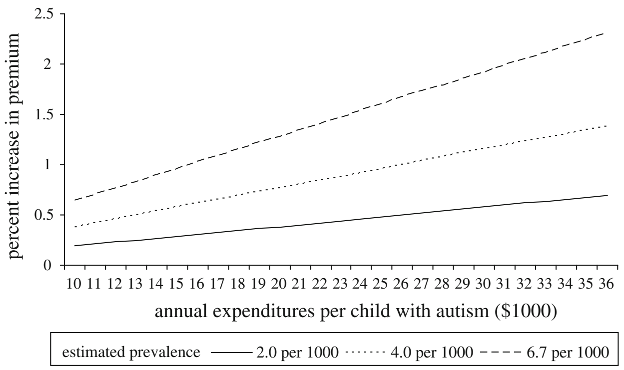

Fig. 1 Estimated increase in healthcare insurance premiums as a result of an insurance mandate requiring coverage of autism treatment

PR is total health insurer premium revenue, which was obtained from an October 2007 publication of the Pennsylvania Health Care Cost Containment Council (*Critical Condition. The State of Health Care In Pennsylvania* 2007), which aggregated premium revenue data that Pennsylvania insurers report on their annual NAIC filings. This sum was adjusted to reflect premium revenue derived from plans subject to HB 1150, as it was originally submitted for review to the Pennsylvania Health Care Cost Containment Council. This adjustment produces a total of $18.44 billion in premium revenue collected for plans subject to HB 1150.

Results

The figure presents the results of this formula based on different assumptions regarding autism prevalence and associated healthcare expenditures. The *x*-axis presents annual expenditures ranging from $10,000 to $36,000. Estimated increases in healthcare premiums ranged from 0.19% (assuming a treated prevalence of 2 per 1,000 children and annual expenditures of $10,000), to 2.31%, (assuming a treated prevalence of 6.7 per 1,000 children and annual expenditures of $36,000; Fig. 1).

Discussion

The results of this analysis suggest that even dramatic increases in the treated prevalence of autism and associated annual healthcare expenditures would result in relatively small increases to healthcare insurance premiums. The average family healthcare insurance plan in the United States costs $1,009 per month, of which families pay an average of 28% (Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 1999–2005, 2007). Our analysis suggests that, using current treated prevalence estimates and an annual expenditure for children with autism of $10,000, the average family would pay an additional $0.54 a month, or $6.44 a year. If current treated prevalence were to double as a result of the new benefit and annual expenditures rose to $20,000, families' annual increased contribution would be $26.10. Even in the unlikely event that treated prevalence were to rise to the accepted community prevalence of 1 in 150 children, and per capita expenditures rose to $36,000 per year, the increase in the family contribution would reach $6.53 a month, or $78.31 per year.

Our analyses imply that the percentage increases in healthcare premiums changed linearly based on changes in assumptions in annual costs and treated prevalence. It is important to note, however that the treated prevalence and the per-child expenditures may interact. That is, as treated prevalence increases, the proportion of children with less intensive medical needs may increase, thereby reducing the average per-child expenditure.

Two study limitations should be noted. First is that these calculations were based on data from existing literature. Dramatic changes in payment available for services to individuals with ASD may affect the treated prevalence and on the provider market. While we attempted to model changes in prevalence up to the accepted community prevalence (Centers for Disease Control and Prevention 2007), we did not model any changes to the provider market. Second, estimated changes to healthcare insurance premiums were based on total costs for children with ASD, not incremental increases, because there is little information on current expenditures for children with ASD not associated with an ASD diagnosis per se (Leslie and Martin 2007; Mandell et al. 2006). Many children with ASD may receive services that are associated with a different diagnosis, as clinicians may assign diagnoses that result in a higher probability of reimbursement. To that extent, the estimates presented here may overestimate actual increases to premiums, given that some healthcare expenditures would remain the same but now would be associated with an ASD diagnosis.

Despite these limitations, the estimates present here offer an important starting point for discussion among policy makers considering the impact of changing insurance regulation. The Pennsylvania legislation upon which these calculations were based has been described as the most generous insurance mandate in the country, in terms of the age group and scope of services covered, as well as the annual expenditure cap. The more limited legislation proposed in other states should be considered in this light, weighing the relatively minimal impact on all insurance premium payers against the potential benefit for children with ASD and their families.

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