

Respondent's Exhibit CC

UNIVERSITY of ILLINOIS

at CHICAGO

Institute for Juvenile Research

1747 West Roosevelt Road (M/C 747)
Chicago, Illinois 60608

Bennett L. Leventhal, MD
Professor of Psychiatry
Director, Center for Child Mental Health & Developmental Neuroscience

Institute for Juvenile Research
Child and Adolescent Psychiatry

Date: 18 July 2008
To: Vaccine Court
From: Bennett L. Leventhal, MD
in re: DWYER, Colin
DOB: 10 November 1998
Age: 9 years, 8 months
Date of Report: 18 July 2008

Available Information

This review is based solely on the records provided to me. These include a binder of materials labeled exhibits 1-12 and a report generated by Dr. Elizabeth Mumper on 3 July 2008. The clinical data that forms the basis of this report are contained solely in these documents.

Identifying Data

Colin Dwyer is now a 9-year-old boy who resides with his parents and brother. He attends a therapeutic school for children with Autism Spectrum Disorders (ASD) in New York.

Past and Developmental History

Colin was apparently the product of a normal pregnancy and delivery. It is not clear how much prenatal care his mother received, as the records suggest a number of "no shows" for obstetrical visits. There may have been a bit of anemia but otherwise, the gestation appears to have been normal. Due to the very large size of the mother's first child, there was concern that Colin may need to be delivered via C-section, however, it appears that this was a spontaneous vaginal delivery at 39 weeks gestation (some notes in the record suggest it was induced, and others suggest a C-section, but neither appears to be accurate). The delivery and post-natal course were uncomplicated, and Colin left the hospital with his mother at the appropriate time. His birth-weight was 7 lbs, 14 ounces.

His Apgar scores were 9 and 9. At the time of discharge, Colin and mother were doing well, and he was breast feeding.

Early development appeared to be generally normal. Colin was reported to walk at 9 months and to say his first words around that time. At 20 months of age, in July 2000, there are reports of speech problems and learning difficulties.

Colin's vaccinations were up-to-date through 2000, but parental concerns led to their discontinuation. It is worth noting that in the various reports of Colin's development, the temporal relationship of developmental delays to receipt of vaccines is inconsistently reported.

The pediatric records generally report normal development, with the exception of language and social delays beginning in the second year of life. Colin's growth chart is striking for a marked change in the growth curve for weight beginning at the 6th month (see exhibit 1m, pages 81-83).

A pediatric record, in March 1999, noted Colin was developing normally, with height in the 90th percentile, weight in the 75th percentile, and head circumference in the 95th percentile. There was also a report of possible eczema. In May 1999, Colin had a normal pediatric examination, with height in the 75th percentile, head circumference in the 90th percentile, and weight in the 50th percentile. In November 1999, at one year of age, Colin was noted to have problems sleeping; the specifics are not clear but his brother apparently had similar problems. At this time, Colin was also noted to only be in the 25th percentile for weight, but well above the 50th percentile in all other growth indices. A pediatric examination, in July 2000 (20 months of age), indicates that Colin was in the 90th percentile for height and the 25th percentile for weight. His motor skills were good, but his speech was limited – 3-5 words and repeats words. He was referred to speech therapy.

In May 2001, Colin was seen by an ENT, Dr. Goldstein, for evaluation of hearing problems possibly associated with his lack of speech at age two years. Apparently, an audiogram was attempted but not successful due to Colin's behavior problems. A "two-person audiogram" was recommended, but it is not clear if this was ever done.

Also in May 2001, Colin was referred to the Toddler-Infant Program for Special Education, Inc. (TIPSE) – early intervention for children with developmental delays – by his pediatrician, Dr. Baker. At this time, Colin was functioning at a very low level. He was unable to follow commands, and his receptive language was said to be at the 3 month level. Interestingly, in this history, it was reported that he never had an extensive vocabulary and, indeed, said "Mama" and "Dada" for only a few months then stopped (Exhibit 10, page 9). At this time, the TIPSE record notes that Colin had poor language expression and comprehension; he was still drinking from a bottle; he did not use utensils to eat; he did not respond to efforts by his parents and teachers to engage him in play; and he was still hand flapping. Colin's general developmental level was determined to be at 18-24 months. It was noted that his cognitive level was at 15 months, his language level

at 9-14 months, and his fine motor level at 15 months, however, it is not clear how these levels were assessed. It was recommended that he be placed in a structured toddler group for early intervention.

In June 2001, at the age of 2 ½ years, Colin was seen by Dr. Irving Fish, a pediatric neurologist at New York University. Dr. Fish's report indicates that "Colin did not speak on time." The report suggests that due to Colin's lack of speech at two years old, Colin had audiological testing that was normal, but which led to a referral for speech and language therapy. Dr. Fish further noted that Colin had poor eye contact, did not respond to simple commands, and interacted poorly with other children. At the time of this examination, Colin reportedly had about 15 words and knew some letters, but he did not speak to communicate. Colin also had "repetitive hand movements" and had trouble with changes in routines. Aside from the noted symptoms of Autism, Colin's physical and neurological examination was normal. Dr. Fish made the diagnosis of "PDD with significant autistic features." For reasons that are not clear, Dr. Fish suggested that "Colin has good cognitive potential" and has "normal development except for communication and behaviors." He recommended an "intensive program ... ABA or Greenspan." Dr. Fish supported this recommendation in a subsequent letter, suggesting 40 hours/week of Applied Behavior Analysis (ABA) services.

By December 2001, Colin had made modest gains in an intensive program that somehow combined the Lovaas and Greenspan models. It was recommended that Colin receive ABA at home. Also in December 2001, Colin was evaluated by Dr. Cecelia McCarton. At that time, Colin was reported to be "doing better after school," but he was still not responding to requests, and his response to ABA therapy had declined. Dr. McCarton's physical exam of Colin was within normal limits, with the previously noted low weight relative to height and head circumference. A psychological examination at this time reported significant delays in speech and language, social functioning and behavior problems – largely non-compliance. Colin was interested in interacting with others, but he continued to have poor social abilities. Cognitive function was measured by the Bayley test, yielding a DQ of 25 months or standard score of 57 – quite delayed – with low scores on verbal and motor functioning with some variability. Colin's Vineland score was reported "low." The CARS composite score was 38, consistent with Autism. At this time, it was recommended that Colin receive ABA therapy 30 hours/week, speech therapy 5 hours/week, and OT 3 times/week. It was also recommended that he be enrolled in a twelve month school program, and that he receive therapy 365 days/year. The diagnosis was "PDD."

Beginning in April 2002, there are extensive reports from the Rhinebeck Health Center – much of this record is illegible. The initial evaluation indicates diagnoses of "Regressive encephalopathy," "Hypersensitivity," "Allergic Rhinitis," "Metabolic Imbalance," and "Leukocytosis." There is no mention of Autism or PDD, but there is a comment that Colin has lost weight due to a blocked abdomen after his MMR vaccination. The bases for these conclusions, however, are not apparent in the laboratory and examination records. Nevertheless, this was apparently the starting point for a series of treatments that are variably associated with improvements in Colin's functioning, yet

there is no evidence of consistent improvement. For example, in October 2002, improvements in speech are reported after Colin's first DMSA treatment (there was also a fine papular rash and moderate dilatation of the pupils), but by November 2002, despite a report that Colin was doing very well, he was not wearing clothes, was having tantrums, had increased flapping, and was very "self-defiant." Again, speech was said to have improved, but it is not clear how. Then, in December 2002, Colin was noted to be "making progress," but there is also a note of "little speech" after his last IV glutathione injection. This inconsistency is not surprising, as these clinicians are not using any measures of Colin's dysfunction and do not have standard indices for measuring change.

Dr. McCarton re-evaluated Colin in December 2002. The physical examination was within normal limits. Dr. McCarton noted some progress, but severe delays in behavior, social function, attention, and communication remained. Colin's cognitive functioning was assessed using the VMI, yielding a reported "borderline" score. A Stanford-Binet score is not clear, but may be 2 years, 7 months. His Vineland scores were low. He was said to have about 100 words and to use rote phrases up to 4 words. He was toilet trained at this time. The recommendations were the same as for the previous evaluation: ABA, school program, speech therapy and OT.

In 2004, Dr. Russell began treating Colin with Valtrex and Diflucan. Colin's pediatrician was uncomfortable with this course of treatment, and so noted that in the pediatric record. Also noted were mild elevations in liver function studies, possibly related to Colin's Valtrex treatment. Other elements of Colin's treatment are a bit confusing; for example, a June 2004 record by Dr. Russell notes a change in Colin's bowel habits that is not apparent in the pediatric records. Similarly, in 2004, Dr. Russell indicated that Colin had various biomedical treatments that were not effective, but another record indicates that Diflucan "probably helped some." In this same note by Dr. Russell, there is a physical examination of Colin that is reported to be within normal limits, but there is no mention that Colin is small or that his weight is not consistent with his height. In September 2004, Dr. Russell reports on a "die-off period after starting the Valtrex" to account for a deterioration in Colin's behavior. At this time, Colin was on Valtrex, Diflucan and Celexa. The reasons for each treatment are not apparent, but there is a reported improvement in speech and a decrease in obsessive and compulsive behavior. Despite continuing these treatments, in December 2004, Colin is reported not to be very verbal, but his words are "becoming clearer." It is also noted that Colin has more stimming during this time. Dr. Russell prescribed iron supplements to Colin, but the reasons for this are not apparent.

In January 2005, Colin's receptive skills are described as "wonderful," and he is said to be doing well socially. Treatment is apparently unchanged and includes a dairy free diet that is also free of whole wheat. Yet, by July 8, 2005, Colin is said not to be speaking many words. By Fall 2005, Colin has cognitive slippage, perhaps "due to yeast." How this was determined or measured is elusive. The basic treatment with antivirals and antifungals continues into 2008 without any apparent changes in functioning. Dr. Russell's last note indicates that it is "[Colin's] hyperactivity and compulsive nature and expressive language that hold him back." Dr. Russell's diagnosis

is "immune deficiency," but type and basis for that diagnosis are not clear from the record.

In the midst of the treatment by Dr. Russell, Colin was evaluated by Bridget Taylor, PsyD, BCBA. Her report, dated December 2005, was based on home observation. At this juncture, Colin had been in the McCarton School for three years. Colin was said to make eye contact and, with prompting, to reciprocate a greeting. He had a lot of stereotyped, non-communicative vocalizations. He protested participating in his discrete trial training exercises. At this time, Colin had no spontaneous speech, and he did not use the available PECS system spontaneously. He was able to answer some questions with single words, but he did not follow instructions. There were continuing tantrums and "head hitting." Dr. Taylor recommended reprioritizing home goals with a focus on attention and compliance as well as functional communication. She suggested special behavioral activities to support each of these goals.

It would appear that Colin has made modest gains over the past several years, but there is inconsistency in reports and response to treatment. There are also no records for the past two years, so it is difficult to fully assess his continuing progress.

Family History

There is a history of delayed speech in Colin's biological brother. In addition, a November 1999 note by the pediatrician indicates that Colin's brother, then just 2 1/2 years old, was just starting to sleep well. It is not clear as to the extent or type of delay and whether there may be other problems associated with that delay in the past or present.

There is a report of a family history of alcohol problems, but this is not entirely clear. There is no additional family history.

Medical History

Penicillin allergy.

Colin has had various reports of constipation.

There are also reports of a variety of conditions, including immune deficiency and heavy metal intoxications, but these are not consistent with the record.

There is no history of significant accidents or injuries. He did have a bump on his head in March 2004, but this was apparently of little consequence.

Summary and Conclusion

The following conclusions are based on the records provided to me and not on a formal evaluation or direct clinical examination.

Based on the information available to me, Colin is currently a 9-year-old boy who is living with his family in New York. He is classified, for educational purposes, as having Autism or a related condition. He attends a special education school where he is enrolled in a program for individuals with ASD. In addition, Colin has been classified as having Autism by a number of clinicians.

Colin has a long history of developmental delays and deviations, consistent with the diagnosis of ASD. Based on the materials available, it appears that Colin's behavioral aspects associated with ASD may have begun as early as 6 months of age when he started to lose weight, as demonstrated on his growth charts. This could have been the result of any number of conditions, but it was a significant change that was then followed by other developmental delays, especially in the area of language. While he said his first words, walked, and met other milestones on time, there is evidence of delays in Colin's language development. The record indicates that he had only 5 or 6 words at 20 months of age when he apparently "lost" this vocabulary and social skills. (It is interesting to note that Colin's brother did not speak until late, therefore, his family may not have been as concerned about Colin due to their earlier experience with developmental delays). This marked the beginning of an odyssey for Colin and his family that continues to this day.

While an appropriate, full assessment of Colin has not been done, it appears that he does meet diagnostic criteria (DSM-IV) for Autism, a Pervasive Developmental Disorder. He had the onset of the disorder before the age of 3 years, has qualitative impairments in social and communicative functioning, and has both restricted and repetitive behaviors. He has had a neurological examination (by Dr. Fish and others) that found no focal abnormalities and no evidence of dysmorphism (although it is not clear how detailed the dysmorphism exam was).

Unfortunately, Colin has not had a complete and adequate evaluation to appropriately assess his clinical situation. He has never undergone testing using the "gold standard" instruments for the diagnosis of Autism Spectrum Disorders: the Autism Diagnostic Interview (ADI) and the Autism Diagnostic Observation Schedule (ADOS). Similarly, he has yet to receive fully appropriate cognitive assessments to examine thoroughly his cognitive deficits. The careful assessment of Colin's verbal and non-verbal cognitive functioning, using instruments designed for lower functioning individuals (such as the Differential Abilities Scale or the Merrill-Palmer), will be helpful in establishing both basal and higher levels of function. From a medical perspective, Colin apparently has not had appropriate genetic testing, which is especially important given the history of developmental delays in his brother.

There is much speculation in the record about other diagnoses and the causes of Colin's ASD. He has undergone many laboratory tests, which some interpret as

indicators of particular metabolic and other conditions. These conditions include “blocked abdomen (Rhinebeck),” “immune disorder (Dr. Russell),” and from Dr. Mumper “oxidative stress,” neuroinflammation,” “methylation abnormalities,” “increased body burden of mercury,” and “other evidence of heavy metal toxicity.” These opinions are not supported by the record. Much of this is based on the multitude of tests performed on Colin and his alleged response to various treatments. However, there are considerable clinical and methodologic problems with this sort of speculation:

1. With a myriad of tests, even with an a priori hypothesis, there is always a risk for a Type I error.
2. Many of Colin’s tests that allegedly confirm a diagnosis are problematic for a variety of reasons, including representing only minor deviations from the normal range and/or the lack of developmental norms for each of these tests.

At this time, the precise cause for most ASDs is idiopathic (unknown). There is some evidence that profound deprivation, some genetic conditions, some intrauterine infections, and encephalopathic insults can cause autistic features. However, the current view is that ASD is a syndrome, which is largely a complex genetic disorder, with multiple genes interacting with each other, to lead to the clinical syndrome.

Despite the lack of clarity as to the etiology of his condition, Colin has been the subject of numerous treatments. This is not uncommon for Autism, or many other medical conditions, for that matter. Clinicians often have to treat symptoms even though no causal agent is known. While Colin has made gains during the course of these treatments, the gains have been modest. Once again, this is not atypical for ASD, especially in the presence of mental retardation. A critical factor in ASD is that most individuals get better over time, almost regardless of treatment. Therefore, it is incumbent upon clinicians to target specific treatments for specific outcomes and then measure change over time, both during the treatment and when the treatment is not applied. Only in this way can one determine if the treatment is actually affecting the course of the disorder, and in what direction – positively or negatively. For example, Colin has received speech and language therapy, ABA, and Discrete Trial Training. These therapies appeared to be targeted and were subject to some measurement of outcome. Indeed, when the ABA no longer appeared to be effective with Colin, it was decreased. Similarly, educational programs have specifically targeted goals and measures for achieving those goals. To a lesser extent, Colin’s speech and language therapy had specific goals and discrete measures of outcome, and there is evidence that these goals have been met. Unfortunately, the same cannot be said for the other treatments, including psychopharmacology (SSRIs) and the use of DMSA, antibiotics, and antivirals. There were no targeted symptoms for these treatments, and no specific measures applied. Consequently, there is no evidence that Colin had a specific response to any of these treatments. It is, therefore, difficult to make a case for their utility.

In short, Colin appears to have an Autism Spectrum Disorder, likely comorbid with moderate mental retardation. He has made modest gains over the course of time.

He should continue to make progress, and that progress may be augmented by targeted behavioral, speech/language, educational, and social skills building treatments.

in re: DWYER, Colin

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Bennett L. Leventhal". The signature is written in a cursive style with a prominent initial "B" and a long, sweeping underline.

Bennett L. Leventhal, MD