Clippings

❑ Effect of exposure to traffic on lung development from 10 to 18 years of age

Whether local exposure to major roadways adversely affects lung-function growth during the period of rapid lung development that takes place between 10 and 18 years of age is unknown. This study in USA investigated the association between residential exposure to traffic and 8-year lung-function growth.

In this prospective study, 3677 children (mean age 10 years [SD 0.44]) participated from 12 southern California communities that represent a wide range in regional air quality. Children were followed up for 8 years, with yearly lung-function measurements recorded. Several indicators of residential exposure to traffic from large roads were identified. Regression analysis was used to establish whether 8-year growth in lung function was associated with local traffic exposure, and whether local traffic effects were independent of regional air quality.

Children who lived within 500 m of a freeway (motorway) had substantial deficits in 8-year growth of forced expiratory volume in 1 s (FEV1, –81 mL, p = 0.01 [95% CI –143 to –18]) and maximum midexpiratory flow rate (MMEF, -127 mL/s, p = 0.03 [–243 to –11), compared with children who lived at least 1500 m from a freeway. Joint models showed that both local exposure to freeways and regional air pollution had detrimental and independent, effects on lung-function growth. Pronounced deficits in attained lung function at age 18 years were recorded for those living within 500 m of a freeway, with mean percent-predicted 97.0% for FEV1 (p = 0.013, relative to >1500 m [95% CI 94.6-99.4]) and 93.4% for MMEF (p = 0.006 [95% CI 89.1-97.7]).

Local exposure to traffic on a freeway has adverse effects on children's lung development, which are independent of regional air quality, and which could result in important deficits in attained lung function in later life. (The Lancet 2007; 369:571-577)

Comments: We are rapidly building new express ways and already existing highways are congested and pollution of air in urban areas is a major concern. Its time to highlight the other side of development and measures must be taken to overcome this negative side of the growth.

❑ Live attenuated versus inactivated influenza vaccine in infants and young children

Universal vaccination of children 6 to 59 months of age with trivalent inactivated influenza vaccine has recently been recommended by US advisory bodies. To evaluate alternative vaccine approaches, safety and efficacy of intranasally administered live attenuated influenza vaccine with those of inactivated vaccine in infants and young children was compared.

Children 6 to 59 months of age, without a recent episode of wheezing illness or severe asthma, were randomly assigned in a 1:1 ratio to receive either cold-adapted trivalent live attenuated influenza vaccine or trivalent inactivated vaccine in a double-blind manner. Influenza-like illness was monitored with cultures throughout the 2004-2005 influenza season.

Out of 8352 children, 7852 children completed the study according to the protocol. There were 54.9% fewer cases of cultured-confirmed influenza in the group that received live attenuated vaccine than in the group that received inactivated vaccine (153 vs. 338 cases, P <0.001). The superior efficacy of live attenuated vaccine, as compared with inactivated vaccine, was observed for both antigenically well-matched and drifted viruses. Among previously unvaccinated children, wheezing within 42 days after the administration of dose 1 was more common with live attenuated vaccine than with inactivated vaccine, primarily among children 6 to 11 months of age; in this age group, 12 more episodes of wheezing were noted within 42 days after receipt of dose 1 among recipients of live attenuated vaccine (3.8%) than among recipients of inactivated vaccine (2.1%,

P = 0.076). Rates of hospitalization for any cause during the 180 days after vaccination were higher among the recipients of live attenuated vaccine who were 6 to 11 months of age (6.1%) than among the recipients of inactivated vaccine in this age group (2.6%, P=0.002).

Among young children, live attenuated vaccine had significantly better efficacy than inactivated vaccine. An evaluation of the risks and benefits indicates that live attenuated vaccine should be a highly effective, safe vaccine for children 12 to 59 months of age who do not have a history of asthma or wheezing. (NEJM 2007 Feb 15;356(7):685-96)

Comments: Authority must allow live attenuated intranasal influenza vaccine above one year of age which is right now allowed only after five years of age.

❑ A new line of treatment discovered for acute lymphoblastic leukemia

A study undertaken by a group of Spanish scientists have recently discovered a new line of treatment for patients with acute lymphoblastic leukemia, published in the official journal, *Blood*, of the American Hematology Association. Here researchers have studied the role of cellular control pathway known as WNT.

The WNT pathway is the device that a normal cell needs to activate in order to initiate a process of cell growth and which, once realised, should deactivate itself. However, it has been shown that, in those groups of acute lymphoblastic leukemia patients with the worst prognoses, this cell control pathway appears to be constantly activated. This phenomenon occurs because the mechanisms controlling this pathway have been silenced due to a process which affects gene transcription and known as metilation. The WNT pathway activated in an ongoing manner gives rise to the expression of specific genes whose function is to activate the growth of tumour cells.

The study has shown, with in vitro trials, that administering a type of medication which impedes this process of metilation or which inactivates the WNT pathway, results in the normalisation of this cell control pathway and, so, impedes the development of tumour cells, inducing the death of the leukemia cells. In this way, this group of medicines will help to enhance chemotherapy results and raise the rates of survival amongst these patients.

The discovery provides a rational basis for being able to use a series of drugs for this disease - such as quercetine (which produces a programmed death of acute lymphoblastic leukemia cells) or Decitabine®, medication, already used with other kinds of pathologies. (Blood, doi:10.1182/blood-2006-09-047043)

Comments: If the results of the application of this research prove to be a success, one consequence may be that the classification of patients with acute lymphoblastic leukemia can be carried out on the basis of the state of activation of the WNT pathway, as this is considered to be a risk factor in the worsening of the disease and in its possible cure.

❑ Children who sleep less are more likely to be overweight

Research indicates that getting inadequate sleep has negative effects on children's social and emotional well-being and school performance. Now a Northwestern University study finds it also increases their risk of being overweight.

The study–conducted in two waves of data collection approximately five years apart–is the first longitudinal investigation of the relationship between sleep, Body Mass Index (BMI) and overweight status in children aged 3 to 18.

This study suggests that earlier bedtimes, later wake times and later school start times could be an important and relatively low-cost strategy to help reduce childhood weight problems. It was found that even an hour of sleep makes a big difference in weight status and sleeping an additional hour reduced young children's chance of being overweight from 36 percent to 30 percent, while it reduced older children's risk from 34 percent to 30 percent. Also, the later bedtimes play a greater role in the overweight status of children aged from 3 to 8, while earlier wake times play a greater role in children aged 8 to 13. No significant difference in the effect of sleep on weight was found between

boys and girls nor was there evidence that children who slept more grew more in height.

Authors found troubling age-related trends in sleep behavior. By age 7, children were sleeping on average less than 10 hours on weekdays. By age 14, weekday sleep time fell to 8.5 hours. A full 16 percent of adolescents aged 13 to 18 were found to sleep fewer than seven hours on weekday nights. The National Sleep Foundation of USA recommends children aged 5 to 12 years get 10 to 11 hours of sleep and adolescents get eight to nine hours. (Child Dev. 78;1, Feb 2007)

Comments: This study not only differs from most other investigations of the effects of sleep on children's weight in its five-year approach. It also helps disentangle the issue of whether sleep actually affects weight or whether children who already are overweight are simply poor sleepers. In addition, it takes into account the possible effects of other variables including race, ethnicity and income Many Indian children are simply not getting the sleep they need. All are concerned about the obesity epidemic among children, and results of this study suggest that something as simple as helping children sleep more at night could reduce their risk of being overweight.

Explain to parents that the National Sleep Foundation of USA recommends that children of elementary school age (five to 12) need 10 to 11 hours of sleep nightly. Teenagers need about 9.25 hours of sleep per night.

Also, consider working with parents and local school boards to promote later school start times for older elementary, middle school, and high school students.

❑ Parents' genes, not parents' arguing, may cause children's conduct problems

Children's conduct problems–skipping school, sneaking out of the house, lying to parents, shoplifting, or bullying other children–are a major source of concern for parents and teachers. As a potential cause of these problems, parents' marital conflict has received a lot of research attention. Now a new study finds that parents' fighting may not be to blame but rather that parents who argue a lot may pass on genes for disruptive behavior to their children. The findings are published in the journal 'Child Development.'

A group of researchers from the University of Virginia and several other universities looked at this question, studying 1,045 twins and their 2,051 children. Some of the parents were identical twins and shared all of their genes and some were fraternal and shared only half of their genes. The study found that parents' fighting is not likely a cause of children's conduct problems. On the other hand, parents' genes influenced how often they argued with their spouses and these same genes, when passed to their children, caused more conduct problems.

This study suggests that marital conflict is not a major culprit, but genes are. (Child Dev. 78;1, Feb 2007)

Comments: This study has potential implications for treating conduct problems: Focusing on a child's parents, as is common in family therapy, may not be as effective as focusing on the child.

❑ Autism spectrum disorders far more prevalent than thought

Autism spectrum disorders are much more common than previously thought, and could affect as many as one in 150 school-age children, CDC researchers reported in the February 9 issue of Morbidity and Mortality Weekly Report.

Data from a nationwide surveillance program in USA, conducted at sites in 14 states in 2002 suggest that the overall prevalence of ASD is about 6.6 per 1,000 eight-year-old children. Even if the lowest prevalence estimates cited are closer to the actual prevalence rates, they are considerably higher than previously thought. Until this report, investigators have typically cited prevalence rates of between four to five per 10,000 and two to three per 1,000, based on the best available data.

The current MMWR published two reports estimating the prevalence of autism spectrum disorders, a category that includes autistic disorder, pervasive developmental disorder, not otherwise specified (PDD-NOS), and Asperger's syndrome.

The reports were conducted as part of the CDC's Autism and Developmental Disabilities Monitoring Network.

The first report estimated prevalence at six surveillance sites in USA. The investigators looked at data on eight-year olds who were identified as having an autism spectrum disorders through screening or other records as displaying behaviors consistent with one of the three diagnoses under the autism spectrum disorders umbrella.

They chose age eight because studies have consistently shown that nearly all cases of autism spectrum disorders will have been detected by this age.

Clinicians reviewed the abstracted records to ensure that they met diagnostic criteria according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR).

Various other parameters like male to female ratio, race of the children and comparison with earlier studies at the same sites were also looked for and it was concluded that autism spectrum disorders in the areas surveyed are more common in these communities studied than previously thought, probably due to better surveillance skills and awareness. (MMWR 2007, 56; SS-1; 1-28)

Comments: We have very limited data on ASD in India as its a known fact that medical records often do not provide such information, and identification is often made by schools or education specialists. Probably this is much more significant study for our country and we must increase our awareness about ASD and support children affected and their parents.

Explain to patients who are parents of young children or are planning a family the importance of recognizing developmental milestones such as smiling, pointing, and waving good-bye. Encourage parents to share concerns about development in their children, and consider screening for autism spectrum disorders if children show signs of significantly delayed social or physical develop-ment. Also point out that there is no credible scientific evidence linking vaccination of children to autism.

❑ Children Who Believe Intelligence Can Be Developed Perform Better

Research on how junior high school students' beliefs about intelligence affect their math grades found that those who believed that intelligence can be developed performed better than those who believed intelligence is fixed. The findings come from two studies conducted by researchers at Columbia University and Stanford University, and are published in the journal *Child Development.*

One study looked at 373 12-year-olds over two years of junior high school. Although all students began the study with equivalent achievement levels in math, students who believed that their intelligence could be developed, outperformed those who believed their intelligence was fixed. Furthermore, the gap between these two groups widened over the two-year period.

Researchers concluded that the difference between the two sets of students stems from the fact that students who believed their intelligence could be developed placed a higher premium on learning, believed more in the power of effort, and had more constructive reactions to setbacks in school.

A second study looked at 91 12-year-olds in two groups, both of whom had shown declines in their math grades. One group was taught the expandable theory of intelligence as part of an eight-session workshop on study skills. Another group participated in the same workshop, but did not receive information on the expandable intelligence qualities of the brain. The students who learned about the intelligence theory reversed their decline and showed significantly higher math grades than their peers in the other group. (Child Dev 78; 1, Feb 2007)

Comment: These findings highlight the importance of students' beliefs for their academic progress. It also shows how these beliefs can be changed to maximize students' motivation and achievement. We must pass on this message to our adolescents and help them improve their scholastic performance.

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