New Intervention Program Helps Parents Reduce Risks for Children Riding in Vehicles

Toronto, March 31, 2005 — Despite parents' best efforts, Canadian children travelling in vehicles remain at risk for serious injury because their parents often use the wrong child safety restraint system. A new intervention program being unveiled today will help parents make the right choices and ultimately protect children from serious injury or death.

The program is based on research conducted through the AUTO21 Network of Centres of Excellence (NCE), and is led by Dr. Anne Snowdon, professor of nursing at the University of Windsor and Dr. Andrew Howard, paediatric orthopaedic surgeon at The Hospital for Sick Children in Toronto.

"While more than 90 per cent of parents use safety restraint systems to protect their children in vehicles, the effectiveness of these systems is compromised because parents use the system incorrectly, choose the wrong system or do not use booster seats, " said Dr. Snowdon. "This new program will create awareness that these actions put children at risk for serious injury or death."

As part of today's launch, the Honourable John Ferguson Godfrey, Minister of State (Infrastructure and Communities), on behalf of the Honourable David Emerson, Minister of Industry and Minister responsible for the NCE, announced a contribution of $5.8 million annually for the next three years to support the ongoing research activities of AUTO21. This funding is part of a national announcement of up to $55.05 million to extend the research activities of four Networks in the areas of child development and literacy, water quality, health, and the automotive industry.

"I congratulate AUTO21 for its contributions to safer vehicles for Canadians and their children, and for also helping the Canadian automotive industry compete on the North American market," said Minister Godfrey. "Investing in groundbreaking ideas and ensuring a safe public environment are central to the federal government's commitment to advance the country's economic performance and the well-being of Canadians."

It's estimated that 85 per cent of safety seats are used incorrectly, which reduces a system's efficiency and puts the child at risk during a collision. The intervention program uses multi-media tools to help parents determine which systems are appropriate for each stage of development, from newborn babies to children up to nine years old. Available Summer 2005, the kit includes a CD that shows step-by-step instructions on how to install different safety seats. The kit also includes a storybook and a growth chart that can be hung on a wall to help parents and children select the safest seat for their child as the child grows.

"Half of Canadian parents believe children are safe in seat belts by age six – we know that's too young. Seat belts simply do not provide enough protection for children who are not big enough for them. Most children do not reach the right proportions until at least age nine," stresses Allyson Hewitt, executive director of Safe Kids Canada.

AUTO21 and several industry partners have pledged more than $875,000 to the research team to fund the program for the next two years. Industry partners include Century Graco, DaimlerChrysler Canada, First Technology Safety Systems, Ford Motor Company, Research in Motion and Transport Canada.

AUTO21 currently supports more than 230 researchers working on auto-related research and development projects at 37 Canadian universities. The projects are supported by more than $11 million per year in combined federal and industry funding. Research occurs in the areas of health, safety and injury prevention; societal issues; materials and manufacturing; design processes; powertrains, fuels and emissions; and intelligent systems and sensors. AUTO21 is funded through the Networks of Centres of Excellence of Canada program.

Networks of Centres of Excellence are unique partnerships among universities, industry, government and not-for-profit organizations aimed at turning Canadian research and entrepreneurial talent into economic and social benefits for all Canadians. The NCE program is managed jointly by the three federal granting agencies— Science and Engineering Research Canada, the Canadian Institutes of Health Research, and the Social Sciences and Humanities Research Council—in partnership with Industry Canada.

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AUTO21 Child Seat Safety Study

A pilot study for the program conducted in four Ontario cities in 2004 indicated many parents move their children out of the correct system much too early. Babies are moved too soon from rear-facing systems to forward-facing ones that don't offer the same amount of protection during a collision, creating risks of severe neck injuries in a collision.

Toddlers and young children are also at risk, as many parents do not use booster seats. Of the families studied in the pilot program, less than half used booster seats for their children aged four to nine. With the exception of Ontario and Quebec, Canadian provinces do not legally require the use of booster seats. The pilot was completed prior to the introduction of Ontario's law in late 2004.

Dr. Howard's research indicated that booster seats can help prevent "seat belt injuries," a severe and common injury to four to nine year old children during collisions. These injuries occur when a child's small frame is unable to accommodate a vehicle's seat belt properly, which should sit snugly on the hips.

"Without booster seats, seat belts can sit too high on a child's abdomen. During a collision, this placement puts the child at risk for paralysis from spinal fractures or spinal cord injuries. It can also cause abdominal organ injuries, where the belt crushes the intestine, liver and spleen," said Dr. Howard. "There's also evidence that children restrained only by a seat belt have higher risk for head injuries."

Additional Results

From 2002 to present, the research team has focused on three themes of study in the area of child safety restraint systems. Approximately 7 researchers at 5 universities across Canada contributed to the project.

Theme One: Using case studies of actual patients at The Hospital for Sick Children, Dr. Howard studied the injuries received by children in car crashes, the restraint systems they were using, and the details of the crashes themselves.

1. The most common severe and preventable injury is the 'seat belt injury.' Many four to nine year old children suffer severe spinal and abdominal injuries when restrained by seat belts alone. These injuries are preventable by the use of booster seats.

2. Children involved in side-impact crashes can suffer severe head, chest, abdominal and leg injuries even when properly restrained. Improved child safety seat positioning offer a potential improvement. These design ideas are being tested by Dr. Altenhof in his computer simulation project in the next phase of research.

3. Keeping children in rear-facing systems for as long as possible reduces the risk of neck injuries in frontal crashes. Severe neck injuries can occur in children up to three years of age when seated in the forward-facing position. Computer simulations run by Dr. Altenhof confirmed much lower risk to the neck for rear-facing three-year-old children compared with forward-facing children.

Theme Two: Dr. Snowdon worked with over 400 families in four Ontario cities to understand how child safety equipment is used in real life, and how it can be made better for families.

1. Parents move children out of safety seats much too early, when children are too young to be safe due to their immature physiques. Children as young as three were using seat belts instead of safety seats.

2. Many family members use safety seats: grandparents transport children 85 per cent of the time when parents aren't available.

3. Less than half of families used booster seats for their children aged 4 to 9 years old

4. Intervention work to date shows that parents who learn more about safety seat use improved their knowledge of effective safety system use significantly following the teaching sessions.

Theme Three: Dr. William Altenhof, a professor of mechanical engineering at the University of Windsor, performed a series of computer simulations of children in crashes, modeling the response of the child and the safety seat to a variety of crash circumstances. Computer simulations were based on crash sled testing and whole vehicle crash testing, as well as the results of clinical collision investigation studies performed by Dr. Howard.

1) Crash testing with Century Graco and Transport Canada identified the high potential of neck injury during frontal crash for toddlers (three-year-old children)

2) Development of computer models predicted very good agreement experimental findings. These computer models save considerable time, money, and efforts in assessing injury potential during vehicle crash.

3) The importance of rearward-facing child seats for toddlers: the crash tests and computer simulations clearly indicate that even children at the age of three-years-old can significantly benefit from rearward-facing positions during vehicle crash.

4) Researchers are developing computer models for testing side impact crashes and new designs to improve child safety in these crashes.