Child Injury Prevention Anticipatory Guidance Literature Review and Annotated Bibliography

September 2012

Project Overview

Background

The purpose of the Child Injury Prevention Anticipatory Guidance literature review was to find and review published literature to identify effective and/or promising practices for providing anticipatory guidance to parents and reducing injuries to children. The literature review was completed to help guide current and future implementation of the A Million Messages project within AHS. Specifically, it will be used to develop and establish guidelines for public health nurses to provide simple, consistent, and appropriate injury prevention guidance at postpartum and well child clinics. The annotated bibliography provides a summary of the relevant literature.

Literature Review

Method:

1. Systematic reviews synthesized in this report were primarily identified using strategic searches of ten electronic academic databases Cochrane Database of systematic reviews, OVID, PubMed, Medline, and EMBase. Assistance in developing comprehensive search filters was provided by Public health innovation and decision support (PHIDS). Data derived from systematic reviews, meta-analysis and full articles within the last 5 years and seminal papers from any year. Search terms included injury prevention, accident prevention, preventing injuries, child, children, kids, childhood, infant toddler, anticipatory guidance, individual interventions, parenting interventions and counselling. Four hundred and thirty three (433) articles were included in the initial review for critical appraisal.

The literature review included:

1. Parents and caregivers with children ages 0-6.
2. Health professionals.
3. Anticipatory guidance in health settings.
4. Individual interventions that focus on injury prevention in a health setting.

5. Reviews from any country and in English.

The literature not included:

2. Parent and caregivers with children over 6 years of age.
3. Non health professionals.
4. Stand alone injury prevention methods for parents of children ages 0-6 years.
5. Theories, theoretical papers, or expert opinions.
6. Literature written in another language than English.

Critical Review

1. All literature was selected according to the search strategy in the "State of Evidence: the Built Environment and Health", AHS 2011-2015.
2. All of the literature was reviewed by two reviewers, blind to each others' selection.
3. Reviewers rated the research on low, moderate and high assessment of:
    a. Identification of population, intervention and outcomes.
    b. Inclusion criteria of target population, outcomes and research design.
    c. Search terms.
    d. Year published.
    e. Ability to replicate the review.
    f. Sources of bias.
    g. Research design.
    h. Methods.
    i. Differences and similarities in the studies when combining results.

Literature Summary

1. A total of 433 articles were selected.
2. A total of 23 were found to be of strong quality assessment.
3. A total of 50 were found to be of moderate quality assessment.
4. Two articles seminal papers of weak quality were included demonstrating some best practice.

Next Steps

1. To review the findings for provincial wide implementation strategies.
2. To review new literature and integrate any new findings a year from now.

Child Injury Prevention Anticipatory Guidance Annotated Bibliography

Quality Assessment: Strong

Bruce, B., McGrath, P. (2005). Group interventions for the prevention of injuries in young children: A systematic review. *Injury Prevention*, 11, 143-147.

This review examines group based injury prevention interventions targeting young children's safety behaviours. Nine evidence-based studies were reviewed. A variety of age appropriate interventions for children and their parents are included in the review. Child interventions included videos, interactive activities, cartoons, stories, puppets, singing, coloring, games, simulation games, demonstrations, modeling/role playing and rehearsal practice using seat belts, and model real street crossing. For parents, interventions included workshops, home activities, and written information.

The results indicate an increase in children's safety behaviours with programs that include group sessions and incorporate multiple interactive learning tools. Limitations of this study include lack of effect on the rates of injuries. The authors conclude that group interventions, such as school classroom teaching, could enhance children's safety behaviours during early childhood. The authors did not test these interventions on children older than 7 years of age. Regardless of safety issues addressed, positive results demonstrate that children may respond to group interventions. The findings suggest that children need to develop problem solving skills rather than content specific knowledge alone.

DiGuiseppi, C. & Roberts, I.G (2000). Individual-level injury prevention strategies in the clinical setting. *Future of Children*, 10(1) 53- 81.

This article reviews 22 randomized control trials. It examines the impact of interventions delivered in the clinical setting on child safety practices and unintentional injuries. The study specifically examines the evidence in terms of two questions: 1) what are the effects of individual level child and adolescent injury prevention interventions delivered in the clinical setting, 2) what are the effects of such interventions on injuries.

The review identifies that counselling or other interventions in the clinical setting result in a greater likelihood of safety practices. Most interventions include written educational materials and verbal counselling to reinforce the message delivered. In particular, car seats safety, smoke alarm ownership, safe hot water tap uses were likely adopted, after interventions delivered in the clinical setting. However, the use and knowledge of car seat safety diminishes over time. There was no effect on safe storage of medications and lighters, and helmet use. The review indicated that clinical interventions that appeared most effective involved a combination of advice, demonstration, subsidized or free safety equipment and reinforcement through repeated messages and visit incentives. Two studies included in the review reported on the effect on childhood injuries and indicated that interventions had little to no effect on minor injuries and the reduction in hospital admissions.

Dupperrex, O., Roberts I.G., & Bunn F. (2009). Safety Education of pedestrians for injury prevention. *Cochrane Database, 2* CD01531 (online)

This review of 15 trials (only 3 with post-test) quantifies the effectiveness of pedestrian education program for all ages in preventing pedestrian-motor vehicle collisions. It quantifies the effectiveness of pedestrian education programs in changing behaviour, attitude and knowledge of pedestrians. Interventions included education programs, media awareness campaigns and parental education program. Note that studies of education aimed at modifying the behaviour of drivers towards pedestrians were not included.

The results indicate that the overall effect of safety education on pedestrian behaviour varies. Safety education of pedestrians improved their attitudes and/or intentions. Knowledge about road safety increased more in trained groups than in non-trained groups. However, none of the trials assessed the effect of pedestrian safety education on the occurrence of pedestrian injuries. Only one trial included evidence of behavioural change in their post-test. The authors conclude that pedestrian safety education can result in improvement in children's knowledge of crossing the street but it is unclear whether this reduces the risk of pedestrian motor collisions and injury occurrence. There is some evidence that changes in safety knowledge and observed behaviour decline over time. Repeated safety education at regular intervals may improve outcomes.

Ehiri J.E., Ejere H.O.D., Hazen A.E., Emusu D., King W.D., & Osberg S.J. (2006). Interventions to increase children's booster seat use: A review. *American Journal of Preventive Medicine*, 31 (2) 185-192

This article assesses the effects of interventions aimed at increasing booster seat use for children aged 4 to 8 years. This review included 1,350 studies and five met the inclusion criteria of evidence based research that focused on booster seat usage. The three types of interventions examined were; education targeted at parents and/or children, education plus loan or given booster seats, and incentives for using the booster seat correctly.

The results of the review indicate that interventions were generally effective at increasing booster seat use in the desired population. Four of five studies showed marked increase in observed or reported booster seat use among at least one intervention group compared to control. Publicity surrounding booster seat legislation at the time may have effected the results of the study. The authors indicate that education may increase knowledge of proper use but fails to produce significant increases in behaviour change. Finally, the review noted that very few public health departments or traffic safety programs are likely to be able to provide incentives or free booster seats to all deserving families. They suggested that local health departments should identify and foster participation and contribution of materials by the private sector.

Gilen, A.C., McDonald, E.M., Wilson, M.E.H., Hwang, W.T., Serwint, J.R., Andrews, J.S. et al. (2002). Effects of improved access to safety counselling products and home visits on parents' safety practices: Results of a randomized controlled trial. *Archives of Pediatric & Adolescent Medicine*, 156 (1), 33-40.

This trial intervention enhanced parents' home-safety practice through counselling, a home safety visit and an on site children's safety centre where parent received personalized education and could buy products at a reduce cost. This study included 265 families of which 122 families completed the post-test. Parents in the standard intervention group received safety counselling and a referral to a children's safety centre. Parents in the enhanced intervention group received the standard intervention services and a home safety visit. Pediatric residents were randomly assigned to the standard or enhanced groups. Parents of infants no older than six months were assigned to the same group as their physician. The intervention had three components: safety counselling, a safety centre, and home safety visits. Safety counselling focused on training the pediatric residents. Residents were invited to attend a seminar on the problem of injuries. They then received a 5-hour training program that included material on childhood injuries and the role of pediatric counselling, hands on training at safety skills stations and role-play practices. The goals of the Child Safety Centre, located near the clinic, were to increase the accessibility and affordability of home safety supplies, personalized education, and to elevate the profile of injury prevention in medical care settings. Safety products were sold at 10% to 15% below retail cost. Home-Safety professionals visited the home to assess injury hazards and made recommendations for the appropriate safety products and practices.

The results indicate that families who visited the children's safety centre demonstrate a greater number of home safety practices. The authors suggest that coupling pediatric counselling with convenient access to low-cost safety supplies and personalized information is necessary to meet the needs of low-income urban families. There was no support that home visits improved parents' safety practice.

Kendrick D., Barlow J., Hampshire A., Polnay L., & Stewart-Brown S. (2009). Parenting interventions for the prevention of unintentional injuries in childhood. *Cochrane Database of Systematic Reviews (Online),* (4).

This review examines the effect of parenting interventions on unintentional injuries in childhood and increasing home safety practices. This review included 1,623 articles identified as potentially relevant and of these 15 articles met criteria to be included in the review. All of the participants in the review were considered "at risk". Prior to the interventions 80% of the families reported medically or self-reported injuries. The findings suggest that parenting interventions such as home visiting provided as part of a multifaceted intervention may have the potential to improve multiple child health outcomes, including reducing self-reported or medically attended injuries among children. There is also some evidence (not conclusive) that parenting interventions may have a positive effect on home safety and child injury rates.

Kendrick D., Coulpland C., Mason-Jones A.J., Mulvaney C., Simpson J., Smith S., et al., (2010) Home safety education and provision of safety equipment for injury prevention. *Cochrane Database of Systematic Reviews, 1* CD055014.

This review evaluates the effectiveness of home safety education with or without the provision of free safety equipment. Secondly, the review assessed whether free safety equipment increases home safety

practices and/or reduces child injury rates for various socio-economic families. A thorough review found 80 randomly controlled trials (RCT), and included children up to the age of 19. Participant demographics were compared for all of the 80 studies to ensure comparability.

The authors conclude that the most commonly provided home safety education was one to one, face-to-face education in a clinical setting or at home. The effect size seemed to be greater with the provision of free or discounted safety equipment. Another finding was that effect diminished over a three-month period. The results often varied between studies but overall families who received home education were more likely to have safe hot water temperatures, working smoke alarms, and stored medicine and cleaning products and sharp objects out of reach. Families who received home education also were more likely to have fitted stair gates and socket covers on unused sockets and to have poison control centre numbers available. None of the studies measured the impact on injury rates.

Klassen T.P., MacKay J.M., Moher D., Walker A., & Jones A.L. (2000). Community –Based Injury Prevention Interventions. *Future of Children* 10(1):83-109.

This study reviews 32 research articles evaluating the impact of community-based injury prevention efforts on childhood injuries, safety behaviours, and the adoption of safety devices. This review focused on older children and school based education. The review indicates that multi-pronged approaches appear to work the best. Multi-pronged approaches included education strategies, behavioural strategies, legislation, and enforcement strategies.

The findings suggest that programs should be tailored to the unique characteristics of the community (e.g., ethnicity or socio-economic status). The authors note that the impact of interventions may be increased by peer pressure and modeling by adults. The authors conclude that community based intervention programs work well for safety topics like bicycle helmets and motor vehicle safety seats, but there is less support for topics like pedestrian safety (indicating that the children in the study were too young), adolescent alcohol use and vehicle safety, and general safety campaigns. The authors noted that knowledge alone would not necessarily change the children's behaviour. The authors suggest that for communities to maximize the community-based approach, they must become active participants in injury prevention methods.

Magar, N.M., Dabova-Missova, S. & Gjerdingen, D.K. (2006). Effectiveness of targeted anticipatory guidance during well-child visits: a pilot trial. *Journal of the American Board of Family Medicine*. 19:5, 450 458.

This study evaluates a targeted method of anticipatory guidance, based on parents' expressed concerns compared to the usual physician-directed verbal education. The study conducted over a two -month period in a Well Child Clinic serving a primarily low-income, culturally diverse population. The study includes 31 physicians and 137 parents (41% participated in the post-test) of children 0 – 8 years of age. The evaluation outcomes includes physician and parent satisfaction, amount of information provided to parents, perceived learning and visit length, with the hypothesis that both parent and physician satisfaction would increase in the intervention group. The intervention includes provision of two educational brochures, and a Parents' Evaluation of Developmental Status form given to parents to read

and complete just before the visit. Anticipatory guidance was then directed at the concerns and questions noted by parents on the forms. The results indicate that physicians had a high degree of satisfaction with the approach but were less satisfied with the educational component. Parents in the experimental group were less satisfied with the educational component, even though they received more written material. The authors suggest that given the demographics of the sample this group might prefer verbal education rather than written materials. Despite the high level of satisfaction with the education received, only 16% to 22% of parents planned to make any changes to their behaviours. Areas for future research include identifying educational methods that satisfy both parents and physicians; methods that take into account ethnicity, demographic characteristics, age of child and position in the family and methods that result in positive behaviour change.

McDonald E.M., Solomon B., Shields W., Serwint J.R., Jacobsen H., Weaver N.L. et al (2005). Evaluation of kiosk-based tailoring to promote household safety behaviours in an urban pediatric primary care practice. *Patient Education and Counselling* 25(2), 168-281

This research article examines the development and feasibility of implementing a computer tailored injury prevention intervention in a primary care practice to increase parent knowledge, positive beliefs and behaviours regarding injury prevention. This randomized study included a sample of 144 low-income parents with children between the ages of 6 and 24 months. The intervention group completed a 40-item assessment and parents received the Parent Feedback Report that included tailored information about two selected injury topics. A physician feedback report was also printed and attached to the child's medical chart. The physician report summarized all at risk areas for the child and encouraged the physician to counsel on these items four weeks after the medical visit; both groups completed a follow up interview. The study collected follow up data on 90% of participants in the intervention and 82% of the participants in the control. There were no statistically significant differences in demographics between the intervention and control groups. Participants lost to follow up were demographically comparable on these variables to those who remained in the study. Parents in the intervention group took an average of 14 minutes to complete the kiosk assessment.

At follow up 88% of the parents reported that they read some or all of the information on the feedback report and they correctly identified safety as a main topic. Most parents (76%) reported that they had discussed the feedback report with a friend or family member. One hundred percent (100%) of the physicians indicated the Physician Feedback report was easy to read and 57% reported it as helpful. Parents of both groups were knowledgeable regarding the laws of car seats, could identify that children were at risk of poisoning, and that falls were a common cause of injury for children. Parents in the intervention group were more knowledgeable on some items including; where a child should ride in the car (16% versus 5%), stair gates (14% versus 3%). The intervention group was more likely to have syrup of ipecac and know how to use it (57% versus 39%). Parents in the intervention group believed that adults needed to watch children to prevent injury (93% versus 73%). Ninety-five percent (95%) of the whole sample reported having a smoke alarm and a car safety seat. The authors conclude that tailoring safety messages for low-income populations through the computer kiosk is feasible and effective in busy clinic settings. The kiosk in the waiting room allowed parents to utilize the time between registration and physician encounter in a productive manner.

Morrongiello B.A., & House K. (2004) Measuring parent attributes and supervision behaviours relevant to child injury risk: Examining the usefulness of questionnaire measures. *Injury Prevention*, 10, 114-118.

The purpose of this study was to identify measures of parents' attributes and behaviours relevant to child injury risk, and to test the Parent Supervision Attributes Profile Questionnaire (PSAPQ). PSQA measures aspects of protectiveness and parental supervision. The study consisted of naturalistic observations of parents' supervision of children on playgrounds with questionnaires subsequently completed by parents. Forty-eight parent-child dyads (child ages 2 to 5 years of age) were randomly selected from seven parks strategically sampled to ensure variation in socio-economic status. Parents completed a "Family Information Questionnaire", a "Injury History Questionnaire", a "Injury Behaviour Checklist" and a "Parent Supervision Attributes Profile Questionnaire" in addition to the fate subscale of parent locus of control" and neuroticism and conscientiousness subscales from the "Big Five Inventory".

The findings indicated that the questionnaire (PSAPQ) could serve as measures of parenting behaviours; a number of parent attributes were relevant to understanding injury risk among children 2 - 5 years of age; results from preliminary test of the new PSAPQ promising for future study of child injury risk.

Morrongiello B.A., Howard A.W., Rothman L., & Sandomierski M. (2009). Once bitten, twice shy? Medically-attended injuries can sensitise parents to children's risk of injuries on playgrounds. *Injury Prevention*, 15, 50-54.

This case control study compares risk perceptions of parents whose child sustained a medically attended playground injury with those parents whose child had not sustained a medically attended injury. Cases were defined as parents of children who had experienced a fall related medically attended injury on a playground within the past year. Controls were defined as designating age matched (within 3 months) and gender matched children who had never experienced a medically attended playground injury. Each case-control parent dyad was assigned to one of two conditions. One group was presented with 10 common injury-risk playground behaviours specific to the equipment on which their child had been hurt, and asked to appraise injury vulnerability and severity. The other group was presented with scenarios about playground injuries that varied in severity but were all on the same child behaviour, and asked questions about this behaviour, attributions for injury, and strategies for prevention.

Findings indicated that parents are typically unaware of the scope of childhood injury and the severity of injury that can result on playgrounds. The control group believed that teaching the children about playground safety would be enough to prevent injury while the case parents believed that in addition to teaching there needed to be increased parent supervision and assessment of equipment. A child's experience of a medically attended injury sensitizes parents to injury vulnerability and severity, whereas parents of uninjured children attribute injuries primarily to bad luck, regardless of injury severity. The authors indicate that a child's injury may provide a teachable moment and that a teachable moment, may enhance the impact on parent beliefs and behaviours relevant to preventing injury recurrence to their children. However, the authors note there was no direct measure of parent behaviour to confirm

that increased perceptions of injury vulnerability and severity translated into changes in parents' injury prevention practices.

Nansel T.R., Weaver N.L., Jacobsen H.A., Glasheen C., & Kreuter M.W. (2008). Preventing unintentional pediatric injuries: a tailored intervention for parents and providers. *Health Education and Research*, 23 (4): 656-669.

The purpose of this study was to determine the efficacy of delivering tailored injury prevention information (TIPI) to parents and concurrent TIPI to parents and physicians on adoption of safety practices. A sample of 306 parents of children age 4 and younger who were attending a Well Child visit pediatric clinic were invited to participate and were randomly assigned to the interventions. Parents completed a baseline assessment using a computer kiosk located in the clinic waiting room that had questions relative to the child's age. Parents were provided with printed injury prevention information from the kiosk immediately after completion of the assessment. The print out consisted of three personalized pages of material with child-oriented graphics. It include a bar graph of the participants injury risk scores for each of the areas, an explanation of scores and detailed safety information about two priority areas based on the baseline survey. Professionals were also provided with a one-page summary of injury risks and a listing of the two priority behaviour changes. Professionals were encouraged to reinforce the information provided and discuss parents' questions or concerns. Parents completed a follow up telephone assessment one month following the clinic visit.

The results indicated that significantly greater proportion of participants receiving the tailored information reported adopting new injury prevention behaviour in the areas of care seats and not leaving the child alone in the bath at follow up.

The findings indicate that clinicians do not provide injury prevention guidance due to time constraints, competing demands, and of knowledge about how to approach the topic. The authors note that parents recall of anticipatory guidance decreased as the number of topics addressed increased. Thus, it is suggested that interventions, such as a computer kiosk, could help efficiently and effectively provide injury prevention information in a busy clinic and that parents receiving educational materials tailored to their child may be more likely to adopt the a prevention behaviour than those that received generic information.

Nansel T.R., Weaver N., Donlin M., Jacobsen H., Kreuter M.W. & Simons-Morton B. (2002). Baby, be safe: The effect of tailored communications for pediatric injury prevention provided in a primary car setting. *Patient Education & Counselling*, 46(3) 175-190.

The purpose of this study was to evaluate the effectiveness of tailored communications delivered within the primary care setting to parents on injury prevention practices. The study indicated that parent directed interventions within the clinical setting offer a potentially effective route for the promotion of safety behaviours and that parents view health care providers as a credible and valued source of information for health practices. The sample included 174 parents with children age 6-20 months old. A two group randomized controlled design (RCT) with pre- and post-intervention measures were used. Parents in the intervention group received tailored injury prevention information.

The results indicate that parents who received tailored injury prevention information demonstrated significantly greater decrease in injury risk to their child. The authors suggest that parents may have an increased receptivity to the message from a physician because messages were tailored to parent's assessments. As well, parents in the intervention group were given both visual and verbal feedback about the risks of injury. The study supports using patient education that is reinforced through interaction with a health care provider or physician as a means of reducing injury risk in children. If tailored messaging is possible, it may have a greater effect on behaviour change.

Pless I.B., Hagel B., Patel H., Leduc D., Magalinos H. (2007). Preventing product related injuries: A randomized control trial of poster alerts. *Canadian Journal of Public Health*, 98(4), 271-275.

This study examined whether product safety notices posted in pediatricians' offices reaches parents and changes their behaviour. All private pediatricians were asked to participate. Of those that responded 23 were stratified by socio-economic status and were then randomly selected by a table of random numbers. At each practice they randomly selected one week for the intervention and another for the control so each office served as its own control. Pediatricians were asked not to change their counseling behaviour. Interviews were conducted with 808 parents after their visit to the clinic.

The results were that only 16% of the intervention and less than 1% of the control group reported seeing the posters. There was no difference in reported change in behaviours related to these posters. These findings are unchanged after taking account of socio-economic status. No parents cited the posters, websites, or pediatricians as their main source of information about dangerous products. The authors conclude that posters, with safety notices, whether sent to physicians office or posted on a website cannot be relied upon to increase knowledge or change behaviours. In regards to the Product Safety Program of Health Canada only 10% of the total sample reported awareness of the website. Most parents reported going to the product related manufacturing for information.

Ramsay L.J., Moreton G., Gorman D.R., Blake E., Goh D., Elton R.A. et al. (2003). Unintentional home injury in preschool-aged children: Looking for the key—an exploration of the interrelationship and relative importance of potential risk factors. *Public Health*, 117(6), 404-411.

This study investigated the physical, social, and psychological enviroment of families with preschool age children to identify the most significant risk factors for unintentional injury. The study was carried out over 1 year. The study included 207 families with children 0-4. The case group included children who presented at the Emergency Department (ED) with one of four injury categories. Two controls per case that had not attended the ED for injuries were identified. The questionnaire included assessing socio-demographic factors, physical environments, use of safety equipment, child health, history of injuries, level of social support, recent life events and personal well being of the main caregiver. The return rate of 78% was obtained.

Significant findings were that the main carer of cases (those with injuries) had a lower level of educational attainment, lived in housholds with larger numbers of children, were more likely to have a physical illness,and were less likely to have had a non medically attended injury in previous years. Two

variables of significance in injury prevention were that case households had lower electrical socket utilization and thought they had lower access to safe play areas.

Rosenthal M.S., Lannon, C.M., Stuart J.M., Brown L., Miller W.C., & Margolis P.A. (2005). A randomized trial of practice-based education to improve delivery systems for anticipatory guidance. ***Archives of Pediatric, Adolescent Medicine,*** **159, 456-463.**

This randomized controlled trial assesses practice-based quality improvement intervention among 44 pediatric practices. "Office systems" were implemented to improve the delivery of anticipatory guidance for parents of young children. The systems implemented included reminder systems, previsit patient checklists, and practice feedback reports to improve effectiveness and efficiency within the practice. The subjects were 80% caucasian families, low income and with at least a high school education.

The results did demonstrate improvements in quantity of anticipatory guidance but did not change parent knowledge or parent behaviour. Possible reasons for lack of increased knowledge or behavioural change included; lack of time for full integration; the variety of counseling interventions and topics between sites,lack of training in counseling techniques, and inability of parents with low incomes to make changes to their child's environment (i.e. landlord controlled). Based on a theory of reasoned action the intervention was seen as an important step toward behavior change in parents. Future studies should identify those aspects of office systems which are most important and examine how to create an intervention that will improve parent knowledge and behavior. Biases include self-reported findings.

Sanghavi D.M. (2005). Taking well-child care into the 21st century: A novel, effective method for improving parent knowledge using computerized tutorials. ***Archives of Pediatric and Adolescent Medicine,*** **159, 482-485.**

Despite expert panel recommendations, most pediatricians do not provide anticipatory guidance and educational counselling, due to lack of time. There is a need for an effective and efficient method of delivering anticipatory guidance that does not demand additional provider time. To help promote anticipatory guidance in well-child clinics this study examined the impact of an interactive self-guided anticipatory guidance tutorial on parental knowledge of injury prevention in the waiting room. The RCT included 101 families of aboriginal parents in Well-Child clinics. The study compares knowledge of parents receiving regular anticipatory guidance and supporting resources from the physician to those completing the computerized tutorial before a visit with the provider in addition to receiving a packet of information.

The results indicated that computer based training offers significant potential for parent in jury prevention knowledge. The findings were that there was a 20% increase in knowledge between the intervention and control group. The participants in the intervention group had positive results including patient satisfaction, and increased knowledge. A noted benefit of the computer-based training is that the pediatrician required no additional time commitment and that the cost of implementing the

education kiosks at the clinics was relatively low. Future studies will need to assess retention of information, influence on behaviour and improved patient outcomes.

Sege R.D., Hatmaker-Glanigan E., De Vos E., Levin-Goodman R., Spivak H. (2006). Anticipatory guidance and violence prevention: Results from family and paediatrician focus group. *Pediatrics, 117,* 455-463.

This study used focus groups to assess family knowledge, attitudes and beliefs concerning certain key issues in violence prevention. Twenty-six (26) pediatricians and 49 parents were randomly selected across three regions in the United States. The findings suggest that written anticipatory guidance can strengthen relationship between pediatricians and families. Parents indicated that written materials seem to be relatively non-threatening. Parents were very positive about receiving information from physicians. The authors suggest that these results can help move clinicians from a risk reduction strategy to one that includes an assessment of the child and family strengths and offers anticipatory guidance based on a strength based model. The authors conclude that effective communication requires that information be exchanged in a respectful manner that reflects the language and the beliefs of both parties. The authors suggest that the provider should offer authoritative information to support parental decision making in a respectful manner without seeming to judge the quality of parenting that the child experiences.

Towner E., Dowswell T., Jarvis S. (2001) Updating the evidence: A systematic review of what works in preventing unintentional injuries. *Injury prevention,* 7(2).161-164 &249-253

This article reviews and updates the evidence on the effectiveness of evaluated intervention studies related to childhood injury prevention. Included studies focused on unintentional injury prevention of children 0-14 years of age and primary prevention measure to prevent incidents or a secondary intervention measure to reduce impact of incidents. Forty-two (42) studies were identified. The quality of the evidence was rated good in 12 studies, reasonable in 13 studies and weak in 17 studies. The outcomes assessed in the studies included the use of helmets, life vests, motor vehicle restraints, child resistant packaging, smoke alarms and other home and playground safety equipment, first aid training, pedestrian and bus safety, bike training, traffic calming and sport and recreation safety programs. Outcome measures included changes in morbidity or mortality, observed or reported behaviour change, change in hazards awareness or change in knowledge.

The findings were that more studies focused on high risk or socially deprived families with strategies that target economic barriers. The authors summarized the interventions that had demonstrated outcomes included urban speed reduction, bicycle training and helmet education, bus passenger education, smoke detector promotion, child resistant packaging and playground environment improvements.

Turner C., Spinks A., McClure R.J., Nixon J. (2009) Community based interventions for the prevention of burns and scalds in children. *Cochrane Database, 3 (online)* CD004335

This article reviews studies evaluating effectiveness of community-based programs to prevent burns and scalds in children. Studies were include if they were coordinated, multi-strategy community based initiatives targeting families with children aged 1 to 4 and reported changes in medically attended burn and scald related injuries. Thirty-nine (39) studies were considered, 4 studies met the inclusion criteria and only 2 demonstrated a reduction in burns and scalds.

The successful interventions included: one-on-one guidance sessions, group training, reading materials (distributed in shopping malls, at physician offices and media events) and distribution of safety accessories.

Vladutiu, C.J., Nansel, T.R., Weaver, N.L., Jacobsen, H.A. & Kreuter, M.W. (2006). Differential strength of association of child injury prevention attitudes and beliefs on practices: a case for audience segmentation. *Injury Prevention*. 12: 35 – 40.

To be effective injury prevention strategies for children often require the active behaviour of a parent or guardian. However, educational strategies aimed at parents have not proven to be optimally effective. The focus of this study was to better understand the social and cognitive determinants of parental injury prevention behaviour and identify subgroups for targeted educational and behavioural interventions. The study involved 594 parents of children ages 0-4 who attended routine Well Child Visits. Participants completed a computerized baseline assessment of six child injury prevention behaviours, outcome expectations, attitudes, barriers, social norms and relevant demographic data.

The study results demonstrated complex relationships between theoretical determinants and behaviour. The relationships differed significantly by age of child and birth order. For parents of first-born children interventions based on a social cognitive approach, emphasizing the development of social norms and attitudes that support injury prevention behaviour, may be most effective. Experienced parents, regardless of the child's age, presented more of a challenge and suggested strategies were to assess previous injury prevention practices and promote maintenance or changes, based on receptivity and assessment of barriers to change. The findings suggested that an audience segmentation strategy that differentiates first time parents from parents of multiple children, and also takes into consideration the children's age, would yield more promising results.

Woods A.J. (2006). The role of health professionals in childhood injury prevention: A systematic review of the literature. *Patient Education and Counseling*, 64, 35-42.

This review synthesized the evidence about health professionals' knowledge, attitudes, and current practices in childhood injury prevention. Child health clinics have been identified as ideal places to promote injury prevention but it was recognized that there are often competing priorities at child health visits and that evidence is lacking on the effectiveness of health professionals. One hundred and four (104) studies up to 2005 were identified. Only 25 studies included randomly controlled trail (RCT) and significant data.

The findings indicated that most health professionals are eager to support injury prevention but that many lacked knowledge in the area. Barriers that were identified by health professionals included inadequate training and knowledge, time constraints, and lack of materials. The authors identified that health professionals provided increased injury prevention information when they had received training. Health professional training that was most effective included 90-minute role-play experience. The authors recommend training to increase knowledge combined with legislation and engineering measures.

Quality Assessment: Moderate

Barkin, S.L., Scheindlin, B., Brown, C., Ip, E., Finch, S. & Wasserman, R.C. (2005). Anticipatory guidance topics: Are more better? *Ambulatory Pediatrics*. 5(6): 372 – 376.

Parental retention of information provided at Well-Child clinics is a prerequisite for later behaviour change. The objective of this study, involving 861 families with children ages 2 – 11 who attended Well-Child Visits, was to compare provider and parent recall of anticipatory guidance topics covered during the visit. Parents and practitioners completed post-visit surveys of anticipatory guidance topics discussed. One-month later telephone survey interviews were conducted with parents, focusing on recall of topics covered at the well child visit.

The results demonstrated that parents and providers agreed about topics discussed during the visit, particularly post-visit. Parental recall decreased with number of topics discussed. Parents indicated a desire to discuss more topics. The study found that 5 – 8 topics were ideal, and 9 or more resulted in information overload. Suggestions for enhancing well-child visits included setting an agenda for topics that would meet the information needs of both parent and practitioner, and would account for the age of the child, and prioritize topics to limit the total number. Setting an agenda may avoid information overload and increase retention. The authors suggest that providers could also use alternate means for providing information, such as videos or handouts.

Barrios L.C., Runyan C.W., Downs S.M., Bowling J.M. (2001). Pediatirc injury prevention counselling: An observational study of process and content. *Patient education and Counesllling*. 44 (20), 141-149

The study describes routine injury prevention counselling for parents of young children. The authors explore how printed prompts for pediatric residents reminding them to counsel, and how remarks by parents and parent behaviours in the exam room affect injury prevention counselling. The sample included 52 pediatricians and 128 parents. To prompt residents to address age appropriate topics, the clinics used a supervision visit form with a total of 60 injury prevention topics.

The analysis revealed that on average 3 injury topics per visit were mentioned. Parents initiated 15% of the topics and 95% of the topics were prompted by pediatric residents. The most commonly mentioned topic was car seat safety. Therefore, having printed prompts to counsel on injury topics lead to an

increase in frequency of discussion. The authors suggest that physicians could benefit from learning how to use "teachable moments" to increase the amount of injury prevention topics provided.

Braun P.A., Beaty B.L., DiGuiseppi C., Steiner J.F. (2005). Recurrent early childhood injuries among disadvantaged children in primary care settings. *Injury Prevention*, 11, 25-255.

This cohort study examines differences in social risk factors and health care use between young children with and without recurrent injuries. The design is a retrospective cohort study using administrative claims and medical records. Children with none, one, or more than one injury were compared. The social risk factors outlined in this study included: substance abusing or adolescent mother, a single parent, a previous child protection or social services referral, or a history of family violence or mental illness in the primary caregiver. All children born at the Denver Health Medical Center in 1993 who continued care there beyond 15 months were the subjects. These children were followed to 36 months. The findings show that children with recurrent injury were more likely to have social risk factors and used health care more frequently. Among the children with one or more injury episode, 78% had at least one social risk factor. The study suggests that children with risk factors can be identified and injury prevention counselling could be delivered to their families at their multiple visits within the health care system. The authors suggest that children with multiple injuries are using healthcare system and therefore are potentially available to receive injury prevention guidance.

Bazelmans C., Moreau M., Piette D., Bantuelle M., & Leveque A. (2004). Role of physicians in preventing accidents in the home involving children less than 15 years in the French-speaking community of Belgium. *Injury Control and Safety Promotion* ,11 (4): 253-257.

This study uses a telephone survey of a random sample of general practitioners and pediatricians to measure their expectations, attitudes, priorities and demands in the area of promoting safety and preventing accidents in the home involving children less than 15 years of age. The questionnaire focused on the doctor's involvement in managing and preventing injuries; the doctor's attitudes towards prevention (i.e., the physician's role, barriers, prevention measures deemed important, etc); and socio-demographic variables. One hundred ninety eight (198) general practitioners and 133 pediatricians met the eligibility criteria and participated in the study.

The results indicated that the majority of physicians mentioned prevention of injuries after an injury. However, only 46% did so during routine consultations. Yet, the majority of physicians in the study believed they have a role to play in child injury prevention and that their role consisted of providing information about safety measures and or risks. Other roles included educating parents on dealing with emergencies, and prevention consults in the home. The barriers for physicians include; the reason for the physician consult did not permit the opportunity to provide injury prevention advice, injuries are not a priority for them, the lack of interesting and informative materials to provide the subject with documentation, the lack of time, insufficient information on the subject, and the patient's lack of interest. The authors note that limitations and biases were that there were fewer participants then planned and that these findings are self reported. Program planners should consider making injury

prevention morbidity and mortality information available to physicians to improve perception of the magnitude of the injury problem and address the lack of interesting and useful educational materials.

Berkule-Silberman S.B., Breyer B.P., Huberman H.S., Klass P.E., Mendelsohn A.L. (2010). Sources of parenting information in low SES mothers. *Clinical Pediatrics,* 49 (6), 560-568.

This study attempted to gain an understanding of the type and diversity of sources of parenting information (print, televisions, internet, physicians and other health care professionals, family and friends). The study examined three questions: (1) What sources from which low SES mothers of newborns receive parenting information. (2) To what extent are socio-demographic characteristics associated with sources? (3) To what extent are sources associated with intentions regarding activities with infants? Dyads of 287 Latina American mothers with low SES from the same hospital were interviewed in the postpartum period during hospital stays.

The results indicate that there did not appear to be any specific patterns in which information sources varied with socio-demographic characteristics. Family and friends, especially grandparents, and then books were reported as important sources of parenting information. English speaking parents were more likely to include additional resources than the two previous mentioned sources of parenting information. The authors suggest that service providers working with families could consider opportunities to include other family members (especially grandmothers). Biases are that the sample was low SES and urban Latino families and therefore the findings cannot be generalized to other populations.

Blumberg, S.J., O'Connor K.S. (2004). Parents' mood and content of pediatric young care for young children. *Ambulatory Pediatrics,* 4(3), 2009-2016.

This article examines the relationship between parents' mood and the provision of anticipatory guidance by pediatric health care providers. A national sample of 2068 households with children ages 4 to 35 months were selected for the study.

The results indicate that parents who were in a positive mood self-reported that they discussed more health promotion topics with their child's pediatrician. Parents who were in a negative mood (short form of MH1-5) were more likely to believe that guidance not received would be helpful, and needed prompting by their pediatrician. The authors suggest that increased attention to parents' mood and emotional well-being may help pediatricians identify parents who desire additional anticipatory guidance and ensure that opportunities for anticipatory guidance are not missed. Limitation of this study include that it was retrospective in nature and this may affect the accuracy of parent recall and that the mood assessment may not have been present over the last 12 months.

Christ M., Sawyer T., Muench D., Huillet A., Batts S. & Thompson M. (2007). Comparison of home and clinic well baby visits in military populations. *Military Medicine,* 172(5), 515-519.

The study was designed to asses the viability of a home based Well -Child Care model. The variables explored were increased parental satisfaction, clinical outcomes and financial differences. The study

included 630 military mothers. Parents were offered a home visit or a clinic visit for their two-week old babies.

Results indicate that mothers were more satisfied with home visits compared to clinic visit in all variables assessed. Clinic visits rated statistically higher in the availability of services or equipment. Those parents who received home visits had more attention given to prevention issues such as how to handle crying babies and sleeping positions. Home visits were also associated with higher perceived quality of anticipatory guidance. There was no difference between groups regarding attempts to call service lines, contacts with advance lines or acute care visits to a clinic or emergency department. The majority of mothers chose a home visit because they did not want to take the baby outside and that the home visit was personalized. Limitations were the military population and the cost fee services meant that the results could not be generalized to the broader population.

Christakis D.A., Zimmerman F.J., Rivara F.P., & Ebel B. (2006). Improving pediatric prevention via the internet: A randomized control trial. *Pediatrics, 118*, 1157-1166.

This study examined whether or not parental activation could occur through directed use of an internet site before a Well Child Visit and if it would increase the discussion of evidence based prevention topics with providers and change behaviours. The sample included 887 families who spoke English from 4 clinics with children ages 0-1. These parents were then randomly assigned to four groups: 1) Parental web content information to be selected by the parent, 2) Provider notification communicated and injury prevention content, 3) Notification of a follow up visit and, 4) The control group. Of the total sample, 93% accessed the internet for the information.

The results indicated that parents in the notification and content group and in the notification only group reported discussing with providers more topics that are preventive. Parents in the notification content group reported implementing more topic suggestions such as a safety device. The authors suggest that web based communication can activate parents to discuss prevention topics and helps practitioners deliver tailored content. Limitations were the effect size and the English speaking population.

Chung P.J., Lee T.C., Morrisson L.,& Shuster M.A. (2006) Preventative care for children in the United States: Quality and barriers. *Annual Review of Public Health,27* 491-515

This article examines the quality of childhood preventive care in the US and identifies the barriers that contribute to poor or disparate quality. The review identified 4349 titles and abstracts. One hundred and thirty-eight (138) met the full inclusion criteria and were selected for review. The findings included assessment of four specific elements of prevention: frequency of well childcare, developmental and psychosocial surveillance, disease screening and anticipatory guidance. The review suggested that fewer than half of US children receive recommended number of Well Child Visits and when visits occur, they lack in quality. Barriers to high quality care included lack of insurance, continuity, privacy for adolescents, clinician awareness or skill, time, race/ethnicity, language, and clinician patient related barriers. The review suggests that implementing office level interventions (e.g. self-administered questionnaires) could help with the effective use of time, multi-language services, and arrange for more

privacy for adolescents. The authors suggest that office system tools such as patient tracking systems, patient and clinician prompts, risk assessment tools and enhanced charting and age-specific education packages could also be helpful in the clinic setting.

Coker T., Casalino L.P., Alexander G.C., Lantos J. (2006). Should our well-child care system be redesigned? A national survey of pediatricians. *Pediatrics*, 118(5), 1852-1857.

The goal of this study was to examine how pediatrician's views should be changed regarding well-child care for children 0 to 5 years of age. A mail out survey was sent to a random list of 1000 general pediatricians with a response from 833 pediatricians. The survey examined their attitudes and behaviours towards the current system and an ideal way of providing well child care.

Results indicate that 92% of respondents rated the current system as excellent or good for providing well-child care for healthy children, chronic illness management and 88% for anticipatory guidance. However, 60% of the respondents, who favoured changes, thought that anticipatory guidance, developmental screening and psychosocial screening should be provided by other health providers such as: nurse practitioners, physician assistants, nurses and medical assistants. Another suggestion was using telephone and email communication with parents to replace office visits.

Combs-Orme T., Holden Nixon B., Herrod H.G. (2011). Anticipatory guidance and early childhood development: Pediatrician advice, parent behaviours, and unmet needs as reported by parents from different backgrounds. *Clinical Pediatrics*, 50(8), 729-737.

This study examined what parents of young children recalled about anticipatory guidance received relative to child well being and development, what they do to promote their children normal development and what are parents unmet needs for information. Parents of children under 6 years of age were approached in pediatric waiting rooms while waiting for a routine Well-Child Visit and were interviewed. Almost 75% of respondents reported remembering at least one item of anticipatory guidance from their pediatricians; however, 65% reported having at least one unmet need for information. The most common types of information recalled were related to health, diet and nutrition, communication with children, discipline and guidance and general development. Car seat use was mentioned by less than 1%; the authors note that parents may simply not remember this issue or it could be missed because of lack of time. The authors conclude that this study emphasizes that although parents believe that they have received anticipatory guidance from their pediatrician and are actively involved in efforts to enhance their child's development they still have many questions and unmet needs for information.

Coupland, C., Savelyich B.S.P., Hippisley-Cox J., Kendrick D., Groom L., & Cross E. (2005). A randomized controlled trial of the effect of providing information on accidental injury admissions and their costs to Primary Care Groups and Trusts. *Family Practices Recertification* 22(3):249-252.

In England, Primary Care Groups and Trusts (PCG/T) are responsible for improving the health of local populations, but there is little evidence of their strategic involvement in accident prevention. This study looks to determine the effect of providing information on local accidental injuries to PCG/Ts on the

development of accident prevention strategies. The intervention group (n=49) were sent profiles containing specific information on hospital admissions for accidental injury and their costs and on accident prevention interventions. Surveys were given to health promotion leads at baseline and at three and fifteen months. The primary outcome was whether the PCG/T had a written accident prevention strategy. Secondary measures included other accident prevention activities, prioritization of accident prevention, and knowledge and attitudes toward accident prevention.

Results showed there were no statistically significant differences in the intervention group versus the control group. At three months, 38% of the intervention group and 42% of the control group had a written prevention strategy. At fifteen months, these values were 55% for intervention, and 50% control. This study found no significant effect of providing this information on the development of accident prevention strategies.

Culp A.M. Culp R.E., Anderson J.W. & Carter S. (2007). Health and safety interventions with first time mothers. *Journal of Health Educaiton Research, 22*(2), 285-294.

The purpose of this paper was to evalute the safety and developmental aspects of a Home Visitor Program in rural communities. First time mothers were recruited at the 28th week of pregnancy and received home visits weekly during the first month after enrollement and biweekly for the remainder of their pregnancy. Weekly visits continued for the first three months of postpartum followed by biweekly visits. The intervention group of 355 mothers were recruitied into the study. Demographic information was collected as well as the 42 item household safety inventory.

At 6 and 12 months the intervention group had signifcantly safer homes than the control group. Items that made the homes safer included: safe hot water temperature, use of electrical cords, storage of medicine, and posions, and less of a chance of a fall down the stairs in the intervention group. As well, intervention group mothers were also more likely to have first aid kits and emergency phone numbers on hand**.** There were no differences in the number of hospital visits between the two groups. However, the intervention group accessed more preventative care at the health clinic.

Farber M.L. (2009). Parent mentoring and child anticipatory guidance with Latino and African American Families. *Health and Social Work, 34* (3), 179-189.

This project implemented a 2-year preventive intervention of parent mentoring (Home Visitation) designed to mitigate the adverse effects of economic resources, inadequate parenting and various barriers to health services. The quasi-experimental design included 50 families of Latino and African American descent. Comparison families were recruited from the health centre area through invitational flyers. Families were provided with information about the survey and project enrolment. Families in the control were matched for intervention families. Mentors received a week of training that included role-plays in the transactional approach to parent-child interaction and guidance. A wide variety of strategies used included: securing free products, follow up phone calls and parent resources that helped parents keep track of the health and safety interventions as well as developmental milestones. The mentors aimed to strengthen the parent-health provider relationship and communication about child's health

and development, to educate parents about the importance of less harsh interaction and age-appropriate behaviour and to increase family knowledge about community resources.

The results indicated that all mentoring activities promoted personal resilience needed for effective and sensitive parenting. Coaching practices included education, counselling, obtaining resources, emotionally supporting parents in child guidance, and meeting family needs. Project results are in line with findings in other home visiting trials as well as the access to free products. The project showed that to be successful in mentoring, parent coaches need to have strong knowledge of and appreciation for parent-child interaction and need to be collaborative and family centred.

Gibbs L., Waters E., SHerrard J., Ozanne-Smith J., Robinson J., Young S., & Hutchinson A. (2005) Understanding parental motivators and barriers to uptake of child poison safety strategies: A qualitative study. *Injury Prevention*, 11(6), 373-377.

This is a qualitative study investigating the prevention of child unintentional poisoning by exploring influences on parental behavioural changes of poison safety strategies. Using a grounded theory approach, a total of 65 parents participated in the study through a series of 23 interviews and seven focus groups. Purposeful selection was implemented to include a diversity of ages, locations and household types. Participants were recruited until data saturation was reached.

The results suggest that parents should support child resistant containers as a mechanism for protecting children from toxic product but then do not always purchase these products due to extra expenses. Parental awareness of toxicity was strongly linked to packaging of products and parents were surprised to discover that products without warning labels could be dangerous to children. The most common safety procedures being used by parents ,if it was available, was storage of products in an overhead cupboard that was out of reach of children. The evidence also indicated that parents stop using safety products such as cupboard and drawer locks and gates and fridge locks when children were able to break them or bypass them. Posion safety practice were more likely to be applied in the kitchen than the laundry or bathroom and more commonly inside the house than in external areas such as a garden shed. Some parents indicated that they were committed to educating their child about toxic products so that their child could be self-regulating. The dominant factor that was likely to shift parents' recognition of personal risk was exposure to a child poisoning event. Exposure to a poisoning event alerted parents to the reality of personal risk and motivated them to increase safety measures within the home. Vicarious exposure to a child unintential poisoning incident was also effective in increasing parents' awareness of the personal reality of the risk. The authors conclude that although poison safety practices were commonly adopted by parents in this study they were not applied comprehensively in the home due to a tendency to tailor safety measures to preceived interests and abilites and alter safe storage behaviours while products are in use.

Gielen A.C., Wilson M.E.H., McDonald E.M., Serwint J.R., Andrews J.S., Hwang W, Wang M (2001). Randomized trial of enhanced anticipatory guidance for injury prevention." *Archives of Pediatric, Adolescent Medicine 1*55, 42-49.

The purpose of this study was to develop and evaluate an injury prevention anticipatory program for pediatric residents. Thirty-three (33) residents were randomly assigned to an intervention or control group. Both groups received a one-hour seminar about injury prevention and The Injury Prevention Program (TIPP) materials. The intervention group (IG) of pediatric residents received 5 additional hours of experiential instruction on injury prevention content including: role-plays, homework assignments and counselling skills. English speaking families with children 6 months or less and with low socio-economic conditions were included. All of the families received subsidized products. Follow-up interviews at 12 months were based on 12 items knowledge assessment, a parent satisfaction survey regarding anticipatory guidance, their beliefs, and a knowledge assessment of safety practices that included a home observation. Pediatric residents (IG) who received additional training provided 3 times the number of safety strategies to parents.

The parents in the intervention group (IG) were significantly more likely to implement injury prevention strategies, (with the exception of poison storage), than the parents in the control group. IG parents were more satisfied with the information they received. There were no differences in beliefs between the two groups of parents or the implementation of the strategies on home visits. Therefore, the increased training for pediatric residents significantly increased the knowledge base of safety practices but not necessarily behavioural changes in the homes.

Gilen A.C., McKenzie L.B., McDonald, M., Shields W.C., Wang M., Cheng Y., Weaver N.L., Walker A.R. (2007). Using a computer kiosk to promote child safety: Results of a randomized, controlled trial in an urban pediatric emergency department. *Pediatrics*, 120:330-339.

This randomly controlled trial (RCT) study evaluated the effects of a computer kiosk intervention in emergency rooms, on parents' child safety seat, smoke alarm, and poison storage knowledge and behaviors. The ED was used because it can provide an appropriate venue for injury prevention and many families that visit the ED are classified as neither emergency or urgent. Nine hundred and one (901) english speaking parents of children ages 4 – 66 months were recruited at the time of a child's ED visit for either an injury or a medical complaint. Participants were randomly assigned to receive either a personalized stage-tailored safety report (intervention) or a personalized generic report. Parents then received a 2 to 4-week followup interview.

The results indicate that the use of a tailored computer based intervention is feasible in EDs. The majority of the intervention group used the kiosk-generated report, more than half read the entire report and two thirds discussed it with others. Low income parents who read the full report were more likely than control parents to practice poison safety strategies and higher income parents in the intervetion group were more likely to report correctly on car seat seafety. Significant improvements in safety knowledge were noted as well as parents information gaps in the intervention group. Limitations

of the study is self-reports on knowledge and behaviour. The study concludes that both child passenger safety seat use and home safety behaviours can be positively affected by interventions in an ED setting with a compter based kiosk. A secondary finding was that car seat safety could be improved with the removal of financial barriers. The free provision to all of the city residents for smoke detectors and batteries most likely had an impact on the high usage of smoke detectors in both groups.

Gittelman M.A., Pomerantz W.J., & SChuber C.J. (2010).Implementing and evaluating an injury prevention curriculum within a pediatric residency program. *The Journal of Trauma: Injury Infection and Critical Care. 69(4),* S239-S244.

The purpose of this study was to analyze whether pediatric residents who complete a required course in injury prevention learn and retain more information than pediatric residents who received the standard training on these issues (eg. rounds, informal discussion, formal lectures). One teaching institution served as the intervention group and two other teaching institutions served as the control. A total of 76 pediatric residents were divided into an intervention and control group. There was no significant difference in the amount of training at baseline.

The study demonstrated that pediatric residents who complete a 2 week course covering injury prevention learned and retained more on injury prevention topics than the control group. The intervention group had significantly higher mean test scores than control residents. This greater knowledge base could lead to more confidence for pediatricians in anticipatory guidance counselling to families. The new model of teaching injury prevention via a course, mirrors other rotations in residency where training is complemented by interactive field experiences. Limitations of the study include that the test used to evaluate knowledge was not standardized, and given that only 50% if the control group completed the follow-up assessment. The authors conclude that residents who complete the injury prevention course had higher increase in test scores on injury prevention information compared to the control group. A course for residents may be a way to provide a stronger foundation to provide anticipatory guidance to families.

Gittelman M.A., Pomerantz W.J., Fitzgerald M.R., & Williams K. (2008). Injury prevention in the emergency department: A caregiver's perspective. *Pediatric Emergency Care,* 24(8), 252-258

This cross sectional survey design assesses the receptiveness and effectiveness of families to injury prevention information during an Emergency Department (ED) visit. Two hundred and forty-six families (246) participated in the first survey and 217 families participated in the follow-up call. Parents with children younger than 15 years, and who attended the ED for any reason were invited to participate.

The parent survey included demographic information, injury prevention information received by their primary care pediatrician, and their view on receiving injury prevention information in the emergency department. At completion of the survey, parents were given an age-appropriate injury prevention handout. Follow up phone calls were made 2 weeks later to determine satisfaction and any self-reported injury prevention changes in behaviour. The results indicate that 98% of the parents were interested in receiving injury prevention information in the form of handouts while in a waiting room

even if it prolonged their visit, 63% of them kept the information in a retrievable place and 23% reported changing their injury prevention behaviour. Limitations were the self-reporting by parents.

Hendrickson S.G. (2005). Reaching an underserved population with a randomly assigned home safety intervention. *Injury Prevention*, *11*, 313-317

This study uses counseling, assessment of maternal safety practices and provisions of safety items to improve maternal self-effiacy for home safety behaviours in an underserved population of low income nonenglish speaking families. The intervention group of 82 mothers received counseling from home visitors, free items to make their home safe, a teaching brochure, and a magnet and calendar to prompt additional injury prevention changes in behaviour. The results indicated that there were no significant difference between groups demographics ,with one exception, that the intervention group had a higher average years of education. Post intervention the intervention group had a significant increase in self-efficacy scores and an observed decrease in controllable safety hazards.

The results indicated that home hazard predictors were: never being married, poor home repair and lower self-efficacy for safety behaviours. The authors suggest that increasing self-efficacy for safety behaviours together with modifications of the home environment may decrease accesss to hazards. It is also important to note that the control group did not purchase safety items. Finally, the authors conclude that interventions to reduce hazards in the home need to be culturally appropriate and suggest interdiciplinary, randomized trials measuring injury outcome as a next step in furthering this area of work.

Kalish M., Banco L., Burke G., & Lapidus G. (2010). Outdoor play: A survey of parent's perceptions of their child's safety. *The Journal of Trauma* 69 (supp 4), S218-S213.

This study examines whether parents who perceive their neighbourhoods as 'unsafe' would be most likely to restrict their child's outdoor play. The analysis was restricted to parents of children aged 5-7 years because of their unique physical, cognitive, social, and emotional development at this age. A 23-question survey was given to a convenience sample of 254 caregivers.

The results demonstrate that parents from urban environments reported that their children's outdoor play was usually supervised and closer to home. The level of parental concern correlated with the frequency of outdoor play they reported for their child. Some factors that contribute or influence their decision to restrict outdoor play included: busy streets and traffic, crime occurring in this area, and exposure to drugs/drug dealers.

Kendrick, D., Groom L., Hippisley-Cox J., Savelyich B.S.P., Webber E., Coupland C. (2003). Accidental injury: A neglected area within Primary Care Groups and Trusts *Health Education and Research* 18 (3)-380-388.

The objective of this study was to assess accidental injury prevention activity within Primary Care Groups and current knowledge and attitudes towards accidental injuries and their prevention amongst

PCG board members. A survey mailed to board members of 51 PCG of which 46 were returned. The main outcome measures were prioritization of accidental injury prevention and factors influencing prioritization, perceptions of the accidental injury rates in the population served by the PCG, injury prevention activities undertaken by the PCG, attitudes towards the PCG involvement in accidental injury prevention, knowledge of accidental injury mortality, and beliefs in the effectiveness of interventions.

The results indicated that 66% of board members see accident prevention as the least important of the priority areas in the government's health strategy for England. Not all board members view injury prevention and the PCG role within this area positively. Only 24% of correct answers in knowledge regarding injury prevention were reported in the survey. This study indicates that Boards will need additional information to develop their potential in preventing accidental injuries.

Lee L.K., Thompson K.M. (2005). Parental survey of beliefs and practices about bathing and water safety and their children: Guidance for drowning prevention. *Accident Analysis & Prevention*, 39 (1): 58-62.

This study assesses parental beliefs and practices regarding bathing their children, as well as general water safety to aid in improving anticipatory guidance messages for drowning prevention. A multiple-choice self-report survey was distributed to a convenience sample of caregivers at the pediatric emergency department over 6 months, resulting in 136 caregivers participating and providing individual data for 209 children.

The results were that 87% of the parents believed that they should never leave a child alone in the bathtub, 52% had remembered discussing water safety and supervision with their child's pediatrician, 46% of the parents indicated that children used bath seats/rings and 5% reporting having left their child alone in the bath tub. Limitations to the study included: a convenience study, parents in an emergency department with an injured child are likely more aware of safety practices, and that the survey was self-administered rather than face-to-face. Nevertheless, this study shows opportunities exist for improvement in pediatric anticipatory guidance, especially with respect to drowning, and could be helpful in designing guidelines around parental knowledge and recall/retention of information.

Lindqvist K., Timpka T., Schlep L., Risto O. (2002). Evaluation of a child safety program based on the WHO Safe Community model. *Injury Prevention* 8(1)23-26.

This paper evaluates the outcome of the WHO Safe Community Model on child injuries by comparing two demographically similar groups. The findings indicate that the total relative risk of child injury in the intervention community decreased more than in the control community. Results are based on data collected before (1983-84) and after (1989) implementation of this program. Interventions included community wide measures (such as local mass media providing regular information about injury prevention), and specific measures (nurses trained to provide age adjusted safety info to parents at compulsory annual health visits). The authors suggest that the WHO Safe Communities Model describes desirable features of community oriented injury prevention policies.

Manning, K.M., Ariza A., Massimino T.K., Binns H.J. (2009). Health supervision visits of very young children: Time addressing three key topics. *Clinical Pediatrics*, 48(9), 931-938

This study assesses the time and actions on three key health topics during health supervision visits with the physician of children aged 0 to 1. One of the key topics is safety and injury prevention. Parents were recruited from five offices serving low-income families. Data for 128 visits were gathered pre and post at the doctors' office.

The results indicated that overall median visit time was 29.9 minutes which included time with the physician as well as the nurse. This is much longer than clinician only time reported in other studies. Safety discussions were observed at 84% of visits with children. Time spent addressing safety issues was brief (median 22 seconds) but the authors note that this has increased from previous studies. Limitations were: the presence of an observer in the clinic, and "snap shot in time". It may be that changes to the system to provide pediatric prevention are needed and one way this could be done is by adding a staff member in clinics that focuses on anticipatory guidance and decreases physician burden**.**

Margolis, P.A., McLearn, K.T., Earls, M.F., Duncan, P., Rexroad, A., Reuland, C.P., et al.(2008). Assisting primary care practices in using office systems to promote early childhood development. *Ambulatory Pediatrics*. 8(6), 383-387.

This cohort study was designed to assess impact in tailoring care by eliciting and addressing parents' concerns to improve providing anticipatory guidance and parental education, and developing sustainable methods of collecting data. The study involved 18 collaborative primary care and 17 comparison practices, and used the Promoting Healthy Development Survey (ProPHDS), a family-centered measure and the Breakthrough Series Collaborative QI model framework to implement and measure progress.

Results demonstrated an increase in the methods and tools used to improve preventive service delivery and a modest improvement in parent-reported measures of quality of care. Limitations include difficulty in administering pre-visit surveys for more efficient practices; short (12 month) duration of the collaborative; change from pre to post-visit survey and impact of recall period. Participation was voluntary; therefore participating practices may be early adopters, and more committed to implementing changes. Further studies are needed to: identify factors associated with practices that are more likely to succeed, and how to support different types or practices.

McDonald E.M., Solomon B., Shields W., Serwint J.R., Wang M.C., Gielen A.C. (2006). Do urban parents' interest in safety topics match their children's injury risk. *Health Promotion Practice, 7*(4), 388-395.

This study was a subsection of the RCT study regarding the use of computer kioks. The authors examined what injury topics are of interest among a sample of low income urban parents attending a pediatric primary care practice, and if there is an association between their injury topics of interest and

their child's assesed injury risk. One hundred and five (105) parents of children between the ages of 6 weeks and 24 months visiting an urban primare care practice were enrolled in the study to receive health maintenance visits. The intervention group completed a computer risk assessment about home safety practices and child passenger safety knowledge, beliefs and behaviours. Parents mostly expressed an interst in poisoning (81%), car crashes (49%), home falls (38%), and home fires (32%). During the 4 weeks post assessement the intervention group received Home Visitors and the control group received no services. Parents in the control group completed a telephone risk assesment and the same injury related questions completed by the intervention group. The highest risks assessed were poisoning (88%), home fires (85%)and at risk for falls (55%).

The study suggests that most parents expressed interest in learning more about poison prevention. However, the parents interest were not in line with the needs of young children. One possible explanation is that fire prevention had been covered recently in municipal fire department and public education campaigns. The authors conclude that the current study describes a lack of association between low income urban parents' interest in injury prevention and their children's injury risk. This has an implication on practice. Soliciting parents interest to direct anticipatory guidance counseling, that are not of parent interest may not include the highest risk to their children. The authors note that starting with the parents interest may be an effective entry point but may not cover the higher injury risks.

Minkovitz, C et al (2007). Healthy Steps for Young Children: Sustained results at 5.5 years. *Pediatrics* 120(3):e658-668.

This quasi-experimental study assesses whether the 3 year Healthy Steps (HS) has sustained effectiveness when children reach 5.5 years. A total of 3165 families or (57%) of the program participants provided interview data. Outcomes for this study included parental responses to child misbehaviour; reports of child's health, behaviour, development and social skills; selected age appropriate parenting practices that promote child health and development; and experiences seeking health care for their HS child.

Findings show that short-term interventions (average of 11 visits over 2 years) seem to demonstrate sustained benefits for children's cognitive and social development and parenting behaviours. Discipline practices were more favourable among the intervention families, and the intervention group received more preferential anticipatory guidance, and reported feeling supported by their health professional. Access to emergency health services was comparable to the national average. This evaluation demonstrates that a universal, practice-based intervention can enhance parenting outcomes that are critical to children's development and that these effects persist beyond the duration of the intervention.

Mock, C., Arreola-Risa C., Trevino-Perez, Almazan-Saavedra V., Zozya-Paz J.E., Gonzalez-Solis R. et al (2003). Injury prevention counselling to improve safety practices by parents in Mexico. *Bulletin of the World Health Organization* 81(8):591-598.

This study evaluates the effectiveness of educational counselling programs aimed at increasing parents' practice of childhood safety in Mexico. Six hundred and twenty-five (625) parents were divided into

three groups based on SES: upper, middle class and lower. Parents were given upgraded lectures and demonstrations lasting 6 hours and utilizing AV materials from several sources. Some of the middle class received clinic based counselling, consisting of talks given in the waiting rooms which lasted 15-20 minutes. The lower SES families received group counselling from nurses and a half-hour home visit by health promoters attached to community health centres. Questionnaires were designed to be completed by parents in waiting rooms on the parents' knowledge of childhood safety. Educational interventions were initiated one to two months after the administration of the baseline questionnaires.

The overall mean percent safe response scores increased from 65% to 73 % (upper SES), 60% to 68% (middle SES) and 54% to 62% (lower SES) in the intervention group of the upper, middle and lower SES respectively. There were no changes in water temperature, smoke detectors and crossing roads safely. There were no significant changes in the control group. In most intervention groups there were significant improvements in respect of actions involving caution and those involving use of devices. In the intervention groups, improvements were most notable among children aged 1-4 years and 5-9 years. It should be noted, low- income parents did not demonstrate a difference between the intervention and control group with the use of safety devices. This may in part be due to cost prohibitors for low income families. Findings conclude that brief educational sessions were clearly effective in improving parents' practice of childhood safety.

Morrongiello B.A., Zdzieborski D., Sandomierski M., Lasenby-Lessard. (2009). Video messaging: What works to persuade others to supervise young children more closely in order to reduce injury risk? *Social Science & Medicine*, 68, 1030-1037.

The specific aim of this study was 1) to identify messages that mothers judged effective for changing views and commitment to supervising children more closely, (2) to determine how best to present information, and (3) to decide how best to convince mothers that injuries pose a true threat to their child. Forty-two (42) parents with children ages 2-to5 years of age viewed a 20 minute video that the dual modality method of text on screen and voice over (it supported both auditory and visual learners). The primary interest was whether the video evoked fear about the consequences of child injury that moved the mothers toward a sense of empowerment, and if the video led them to feel blamed in a way that would negate the effects of the intended messaging.

Five findings evoked fear and action. Mothers indicate that the use of graphic images was effective because emotional impact was needed to convince parents of the potential severity of injury. Parents endorsed the impact of testimonials, mothers related to these emotions knowing that they would be upset if their child had suffered a serious injury. The parents also indicated that using statistics and facts added credibility. Highlighting unexpected injury cases made them realize that they still had more to learn about risk factors. Parents also indicated that messages that included long term consequences of injury was effective because it evoked thoughts about how the family might be changed forever. Parents indicated that the reminder that parents should not ignore thoughts or doubts about leaving their children unattended was a positive and effective reminder. The finding that lead to feelings of blame were that many mothers objected to the message *injuries are not* accidents, they indicated that they understood and appreciated the intent of the message but that they felt that this was not always the

case sometimes things happen in front of parents. The authors conclude that video-based messaging can be effective medium to increase knowledge and evoke positive changes in beliefs and attitudes.

Nelson C.S., Tandon S.D., Duggan A.K., & Serwint J.R. (2009). "Communication between key stakeholders within a medical home: A qualitative study. *Clinical Pediatrics* 48 (3): 252-262.

This qualitative study aimed to determine perceived benefits, detriments and barriers to communication between Pediatricians and Home Visitors and therefore focused on an "at risk" group of parents. The study consisted had three focus groups of 12 home visitors, 33 parents and 19 pediatricians who had families participating in a Home Visitor Program.

Findings show that all stakeholders perceived benefits of having the home visitors present before or during the visits with pediatricians. All participants felt there needed to be written consent for Home Visitors and Pediatricians to share information. There was a lesser concern for the following: parent concerns of sharing confidential information, that it may be a waste of time, and that pediatricians were not knowledgeable about the role of the Home Visitor. This article concludes that greater coordination between home visitation programs and pediatric providers may strengthen the home visiting services and therefore reinforce advice and anticipatory guidance that is given by providers.

Olson L.M., Nikolas M., Halfon N., Schuster M.A., O'Connor K.G., & Mistry R. (2004). Overview of the content of health supervision for young children: Reports from parents and pediatricians. *Pediatrics*, 113 (supp 6): 1907-1916.

The purpose of this study is to describe the content of anticipatory guidance provided to parents of infants and toddlers and to identify primary areas of unmet need as reported by parents and pediatricians. Parent data was obtained from the National Survey of Early Childhood Health to include 2068 children ages 4-to 35 months of age. Pediatrician data obtained from a national survey of members of the American Academy of Pediatrics.

The surveys indicated that parents and physicians tended to agree on ranking of importance of topics most frequently addressed at health supervision visits. Parents and physicians indicated that traditional topics of preventive care (immunization, feeding issues, and sleep patterns) are most frequently discussed, whereas topics such as developmental needs and family context are less commonly addressed. There was a higher rate (64%) of unmet needs for English as a second language parents than whose first language was English (29%). Parents indicated that topics that were not discussed (unmet needs) would have been helpful especially in the areas of discipline strategies and toilet training. Other areas of unmet need included burn prevention, reading vocabulary development, social development, and childcare. The authors conclude that parents place value on the anticipatory guidance and that more research is needed to understand issues related to specific topic areas.

Paradis H.A., COnn K.M., Gewirtz J.R., & Halterman J.S. (2011) Innovative delivery of newborn anticipatory guidance: A randomized controlled trial incorporating media-based learning into primary care. *Academic Pediatrics*, 11(1), 27-33.

This study measures the feasibility of incorporating a DVD into traditional Well-Child Care and asseses the impact of DVD-based intervention on parents knowledge, self-efficacy, and problem solving competence and to evaluates the acceptance of using DVD in the clinic setting. Participants (131 parents) in the intervention group viewed a DVD video on a desk top computer in the examination room. Participants in the control group received paper handouts before the visit with the provider. Both groups were given materials (DVD or printed) to take home after thier visit.

The results indicated that media based learning in the primary care setting is feasible and well accepted. Participants in the intervention group demonstrated higher confidence with specific infant skills and reported feeling better prepared to care for their baby compared to controls. As well, families in the DVD group had significantly fewer additional office visits to the primary care practice compared to control families. A secondary finding was that those who took the DVD home watched it and then passed it on to someone else. The authors conclude that using a DVD in a primary care clinic can be a low cost intervention to supplement well child clinics. Limitations that are noted include that the control group participants received anticipatory guidance which may have impacted the results and that behaviour change of the provider was not measured. The participants in the study also had a higher base knowledge than expected and this may have had an impact on the differences in knowledge between groups. Finally the study was conducted in a low income urban teaching clinic and findings may not generalize to other populations.

Perry, C.D. & Kenney, G.M. (2007). Differences in pediatric preventive care counselling by provider type. *Ambulatory Pediatrics*. 7(5): 390 – 395.

This study investigated whether provider type had an impact on probability of receiving advice on five areas related to healthy behaviours and injury prevention: healthy eating, physical activity, harmful effects of smoking in the home, proper safety restraints in a car and use of a helmet when riding a bicycle. The sample consisted of 918 children ages 3 to 17 that had only 1 preventive clinic or office visit in the previous year.

The findings indicate that providers make choices about what areas to emphasize during preventive care. Pediatricians were more likely to counsel about healthy behaviours and injury prevention than family physicians or non-physicians. Another finding was that higher income families were more likely to access pediatricians while middle and lower income families accessed family physicians as well as other types of health professionals. Overall, the study demonstrated that even for children attending a preventive care visit, less than half-received counselling on exercise, smoking in the home, proper restraints and helmet use while cycling. Just over half-received advice on healthy eating. Limitations of the study included: a sample restricted to children who had a preventive care visit in the past year, children who were healthier than average, small sample size, data which did not include specific content of advice given or ability to put advice into practice. Recommendations for future research included investigating whether receiving advice leads to healthier behaviour and improved child health and identifying tools needed by parents to implement advice.

Powell E.C., Malanchinski J. Shehan K.M. (2010). A randomized tirla of a home safety education intervention using a safe home model. *The Journal of Trauma*, 69(4 Suppl), S233-236.

This project examined the effectivness of using a Home Model compared to distributing the The Injury Prevention Program (TIPPS) information sheet in a waiting room of a dermitology clinic. The authors compared retention of information between the two groups (371) of parents. A convenient sample was recruited into the study. The method of intervention (home model vs TIPPS) was dependent upon days of the week. The Home Model was a model home in the waiting room that had injury prevention information built into the rooms within the home. The primary outcome measure was the difference in knowledge between the groups.

The data suggested that parents had a high level of safety knowledge before participating in the study. The intervention resulted in a modest increase of knowledge for those assigned to both groups. The authors suggest that lack of time is identified as a barrier to office based counseling for injury prevention. Home safety model and other systems used in the waiting room may be helpful. The information in the model, could be accesssed by parents with focused attention to topics that for the parent has the greatest interest. Limitations of the study include that measurement tool was not validated and the study may have lacked the details needed to accurately discriminate the level of knowledge among participants.

Reich S.M., Bickman L., Saville B.R., Alvarez J. (2010). The effectiveness of baby books for providing pediatric anticipatory guidance to new mothers. *Pediatrics*, 125(5), 997-1002.

This study focused on the retention of anticipatory guidance of baby books read to infants as an effective injury prevention method. One hundred and sixty-eight (168) low-income women from obstetrician offices were randomly assigned to three groups. The first group received an educational intervention book during the third trimester of pregnancy and then at 2, 4, 6, 9, and 12 months of age. Each book contained information about infant physical, cognitive, and emotional development, safety practices inside and outside the home and in the car, maternal self care, benefits of breastfeeding, discipline strategies, and nutrition recommendations. Each book addressed each of these topics as they pertained to specific ages. The second group received books with the same illustrations, but with non-educational text on the same schedule. The third group did not receive anything. The participants were interviewed in their homes during their third trimester of pregnancy for a baseline assessment, and when their infant was 2, 4, 6, 9, 12, and 18 months of age with telephone calls 2 weeks after each visit.

The results showed that the women in the educational book groups were 95% higher in their confidence level than those with no book and consistently answered 1 to 2 questions more than the other two groups. The authors suggest that because the books were written at a low reading level, and have pictures to supplement the content. The books were more visually interesting and increased the likelihood that mothers would read the material more than once, and this could contribute to retention.

Robertson A.S., Rivara F.P., Ebel B.E., Lymp J.F., & Christakis D.A. (2005). Validation of parent self reported home safety practices. *Injury Prevention* 11(4), 209-212.

This study evaluates the validity of 212 parents' self-reported home safety practices concerning smoke detectors, bike helmets, car seats, and water heater temperatures. As part of a randomized controlled trial (RCT) parents participating in the interview and those who were not interviewed, completed a telephone survey 2 weeks post a well child visit. Home visits (at 9 weeks post telephone interview) were blind and included all those parents who were willing to have someone visit their home (64). Parent's responses to a telephone interview were compared with observations of safety practices during a home visit.

Self-reports were reliable for smoke detectors, bike helmet use, care seat use and water temperature but overrated on properly working smoke detectors and proper use of bike helmets. The authors speculated that this might be partially due to social desirability or ignorance of correct behaviour. The authors caution that self-reported behaviour might be overrated.

Romaire M.A., Bell J. F., (2010). The medical home, preventive care screenings, and counselling for children: Evidence from the Medical Expenditure Panel Survey. *Academic Pediatrics* 10 (5), 338-345.

This study examines the association between having a medical home and receipt of health screenings and anticipatory guidance. Note that in this study the medical home is considered a system of care that is continuous, accessible, comprehensive, family centred, coordinate, culturally effective and has quality and breadth of interaction between the medical home and family. A cross-sectional survey was conducted of the 2004-2006 Medical Expenditure Panel Survey (MEPS) which included 21 055 children aged 0-17 years who visited a health care provider in the year prior to the survey.

The results indicated that receipt of anticipatory guidance ranged from 27% to 57% of caregivers receiving advice. Fifty-six percent (56%) of the children in this study sample had at least one preventive care visit. A limitation of this study is that data in this study is self reported, and therefore subject to recall bias. The quality or exact content of advice cannot be evaluated, nor could the parent/caregiver understanding of the advice. However, the authors note that there is a positive association between the medical home and receipt of certain health screenings and anticipatory guidance. The medical home approach to delivering health services may foster an environment in which a parent/caregiver and a provider can work together to meet the particular preventive needs of the child.

Sangvai S. Cipriani L., Colborn K., & Wald E.R. (2007). Studying injury prevention: Practices, problems and pitfalls in implementation. *Clinical Pediatrics* 46, 228-235.

This study aims to determine feasibility and effectiveness of a chronic care model approach to injury prevention compared with standard anticipatory guidance. Three hundred and nineteen (319) caregivers of children age 0-5 years received: focused counselling from a physician and health assistant, as well as educational handouts, follow up phone calls and access to free safety devices and car restraint evaluation. Of the eligible parents 37.5% participated. Home visits were completed at 6 months to observe safety practices. Safety issues focused on: use of automobile restraints, use of smoke detectors, safe storage of hazardous material, setting of appropriate tap water temperature, and safe storage of guns.

Findings indicated no significant difference in the number of medically attended injuries and suggest that findings were unable to provide definitive evidence of the effectiveness of a chronic care model on changing safety practices in the home.

Schweer L.H., Cook B.S., Bivens K., Van Kuiken D. Garcia V.F., Falcone R.A. (2006). Family perception: Quality of life following a child's traumatic injury. *Journal of Trauma Nursing* 13 (1), 6-16.

The purpose of this study was to describe the pediatric quality of life at one and six months post traumatic injury. Parents (355) of children between 5 and 7 years with an initial ICD-9 code between 800 and 959.9 (marking severity of traumatic injury) were included in the study. The Child Health Questionnaire was developed for measuring the well-being of children, the relative burden of disease, and the benefits of treatment. One hundred and sixty-one (161) and 218 parents participated at 6 and 12 months respectively. It demonstrates the long-term impact of injury and validates the need for earlier intervention and anticipatory guidance for child and family.

The findings show that according to the parental report, the injured child's quality of life was significantly lower than U.S. norms in both psychosocial and physical measures for at least 6 months post injury. Limitation of the study was that self-report was used.

Schonwald A., Horan K., Huntington N. (2009). Developmental screening: Is there enough time? *Clinical Pediatrics*, 48(6), 648-655.

This study looks at using a pediatric screening tool prior to well child visits as an effective way to provide anticipatory guidance to parents of low income. It specifically focuses on the amount of time added to visits with the addition of a developmental screening tool. Eighty-two (82) parents were given a screening tool while waiting in the physician's office before the visit. The 10-item parent survey typically took 5 minutes to complete. A researcher timed the routine screening visits before and after implementation. Parents whose children were seen before and after screening began were contacted about their perceptions of the visit.

Findings show that there was no change in visit lengths after the screening was included. Over 70% of parents found the screening tool helpful and supported including it in clinic visits. The authors note, that the survey may be a shift in empowering parents to guiding the questions on injury prevention for their children by participating in a screening tool and may help reach less confident and more reserved parents and families. The screening tool often served as a prompt for parents and reminded parents of questions they wanted to ask, but may have forgotten.

Sege R.D., Hatmaker-Glanigan E., De Vos E., Levin-Goodman R., Spivak H. (2006). Anticipatory guidance and violence prevention: Results from family and paediatrician focus group. *Pediatrics, 117,* 455-463.

In this study, focus groups of 49 parents and 26 pediatricians were conducted to assess family knowledge, attitudes and beliefs concerning certain key issues in violence prevention.

Parents indicated that written materials seem to be relatively non-threatening. Parents were very positive about receiving information from physicians. It was suggested that written anticipatory guidance could enhance the relationship between parents and pediatricians. The authors suggests that these results can help move clinicians from a risk reduction strategy to one that includes an assessment of the child and family strengths and offers anticipatory guidance based on a strength based model. However, the two controversial issues of corporal punishment and gun usage were not received well by parents. The authors conclude that effective communication requires that information be exchanged in a respectful manner that reflects the language and the beliefs of parents. Anticipatory guidance that consists of authoritative useful information should be offered in a supportive manner that respects parental decision-making and improves parenting practices.

Simon T.D., Phibbs S., Dickinson L.M., Kempe A., Steiner J.F., Davidson A.J & Hambridge S.J. (2006). Less anticipatory guidance is associated with more subsequent injury visits among infants. *Academic Pediatrics* 6 (6) 318-325.

The purpose of this study was two fold: 1) to describe clinician delivery of injury prevention anticipatory guidance and injury visits in a birth cohort, and 2) to describe the association of injury prevention anticipatory guidance with subsequent injury visits. The population for the review included 2610 infants born from July 1, 1998 to June 20, 1999 at an urban hospital, parents with low income, and low education, English as a second language and includes free car seats, and seen subsequently for Well Child Visits and/or injury by 16 months of age. The primary outcome measure in this study was the occurrence of a first injury-related medical visit during the first 16 months of life. The primary exposure measure was injury guidance, or the ratio of injury prevention anticipatory guidance items delivered to that expected by the 12-15 month well child visit.

The results indicated that the injury prevention items most often discussed were car seats (84%-95% of all Well Child Clinic visits) and rolling over at the 2 month visit (80%). Seventy-four percent (74) of children received $\geq$50% of the expected anticipatory guidance. Two hundred and seventy-seven (277) children (11%) had an injury visit, primarily for minor injuries. Limitations of this study are that the injury visits addressed are those that led to medical care within a specific setting and some patients may have received medical help outside of this setting. This study does suggest that receiving less comprehensive injury prevention anticipatory guidance is associated with more subsequent injury visits over the first 16 months of life. Delivery of a few injury messages by a clinician to parents was statisically significant associated with fewer visits.

Smithson, J., Garside, R. & Pearson, M. (2010). Barriers to, and facilitators of, the prevention of unintentional injury in children in the home: a systematic review and synthesis of qualitative research. *Injury Prevention*. doi: 10.1136/ip.2010.026989.

This is a systematic review of qualitative research published in 9 peer-reviewed journals. The search covered 16 electronic bibliographic databases and websites.

The findings highlighted barriers and facilitators to successful child injury prevention interventions in the home. These were grouped according to the main themes. At the external or organizational level, the

barriers included weak legislation or lack of information for parents about policy and legislation. At the physical or environmental level, socio-economic factors affected housing choices and parents' ability to modify rented or shared accommodation. This also had an impact that effected effective provision of safety equipment, including support with installation, ongoing support for usage of safety equipment, maintenance and safety checks. At the individual level parents' cultural and socio-economic background, age and experience affected their understanding of risk, as did language barriers and cultural differences and practices, including a mistrust of officials. The timing of the anticipatory guidance also had an impact. The closer the information was given at birth the lower the retention of the information. It seems that information 2-weeks postnatal was the preferred timing for retention. The implications of findings for practitioners and policy makers include awareness of cultural differences in definitions of risk and perceptions of risky behaviour. As well, the authors note that there is a need to provide realistic ways for parents to keep children safe; and to recognize the reasons people fail to comply; and a need to provide advice that is more generic and supportive on child development. Furthermore, there is a need to recognize and build on mothers, and fathers, safeguarding efforts.

Swart L., van Niekerk A., Seedat M., & Jordaan E. (2011). Paraprofessional home visitation program to prevent childhood unintentional injuries in low-income communities: A cluster randomized controlled trial. *Injury Prevention* 14(3),164-169.

This study investigates the effectiveness of a Home Visitation Program to improve home safety and prevent injuries of children in low-income settings. This study included households with children <10 years (410 households). The intervention households were visited 4 times (control group were not visited at all). In each home visit, visitors provided caregivers with information on safety practices, completed an injury hazard checklist with the caregiver, and discussed possible changes to reduce risks. The home visitors were community residents who received training in unintentional injury prevention methods. This was a cluster sample, not randomized, for convenience and to reduce the chance of potential contamination. Key outcomes were to measure the presence of household hazards through scores for burns, poisonings, and falls.

The findings show that all changes, measured by a six risk score, except for falls, were in a favourable direction as reflected by the total risk score in which the intervention households obtained a lower total injury risk mean score than the control households.

Tanner J.L., Stein M.T., Olson L.M., Frinter M.P., Radecki L. (2009). Reflections on well child care practice: A national study of pediatric clinicians. *Pediatrics,* 124(3), 849-857.

This qualitative study examines pediatricians perspectives on Well Child Care. Specifically asking about what is most important about how physicians currently deliver well-child care including priorites for the content of the care and what if any changes are needed to provide comprehensive high-quality child care. Focus groups(282 pediatricians and 41 pediatric nurses)were held thoughout a geographical area. Sites were selected to ensure geographic and patient diversity and reflected a wide range of urban, suburban and rural practices.

Major themes that developed include establishment of a therapeutic relationship and individualized care. Physicians emphasized the importance of the doctor-patient relationship and emphasized the importance of trust between clinician and the family. Physicians also emphasize the importance of prioritizing family concerns and that trust, mutual respect and knowledge of the child and the family context over time are key. Participants agreed on the importance of priortizing around family concerns. Beyond that they most often mentioned priorites that align with the AAP health supervision guidelines but expressed frustration in the number of recommended health directives. Physicians also suggested creating links with community organizations to help with care of a family. Finally all groups discussed the importance of developmental screening. Most embraced standardized parent questionnaires to screen for developmental delays and behavioural problems. The authors conclude that this study highlights the dilemma of priortization of deciding what to address with in a limited time. Using community linkages, information technology and the integration of existing innovative programs are suggested ways to help meet demands in the primary care setting.

Van Cleave, J. Heisler, M., Devries, J.M., Joiner, T.A., Davis, M.M. (2007). Discussion of illness during well-child care visits with parents of children with and without special health care needs. *Archives of Pediatric & Adolescent Medicine*. 161 (12), 1170 – 1175.

This article reported on the results of a written, self-administered pre and post visit survey of 500 parents (or legal guardians) with children between the ages of 0-to 6 years, attending community-based pediatric practices for Well Child Care visits. The objective of the survey was to compare parents of children with special health care needs (CSHCN) with other parents, with the hypothesis that if parents discussed more illness topics this would take precedence over preventive topics.

Instead, the findings indicated that discussing more illness topics was associated with discussing more topics that are preventive. Discussing illness is an expectation and a priority for parents, particularly parents of CSHCN, according to survey findings. Findings indicated that including illness concerns at well-child care visits may improve chronic disease management, and revising guidelines based on these findings might improve visit outcomes. Limitations are that the parents were older and well educated. They also conclude that parents in CSHCN clinics are better prepared than the average parent.

Weiss-Laxer N.S., Mello M.J., Nolan P.A. (2009). Evaluating the educational component of a hospital-based child passenger safety program. *Injury Prevention* 14 (3) 164-169.

Interventions that combine educational programs and discounted child safety seats have been demonstrated to improve parental child passenger safety knowledge and practices. This cross sectional study looks at a sample that participated in a hospital-based child safety program that consisted of a 1-hour bilingual child passenger safety class for 146 parents who received free car seats. The study uses a survey to evaluate the child passenger safety knowledge and reported safety behaviours of parents who attended the injury prevention centre and assesses motivators and barriers to correctly using a safety seat. A 15-minute telephone survey at 6 months was conducted with 79 past participants of the program.

The results indicated that 2/3 of parents were able to correctly identify the minimum age and weight at which a child can transition from a rear-facing seat to a forward-facing seat but only 39% could correctly answer when to transition to a booster seat. The authors concluded that parents surveyed more than 6 months after completing the program displayed less correct safety seat knowledge compared to those who had more recently participated in the program. This article suggests that some possible programmatic changes could include sending reminders to parents to refresh safety seat transition knowledge, particularly for older children. Common motivators that were identified included the law and safety of their child. Barriers included that parents did not use a seat because it was a short ride, a lack of understanding of the importance of safety seats and child's comfort. The authors suggest that it could be beneficial to incorporate curriculum components that address the parental motivators and barriers to correct safety use in the class.

Woods, A, et al (2004). Injury prevention training: a cluster randomized controlled trial assessing its effect on the knowledge, attitudes, and practices of midwives and health visitors. *Injury Prevention* 10(2), 83-87.

This study evaluated the effectiveness of injury prevention training on Midwives and Home Visitors as it relates to the risks associated with baby walkers. It is part of a larger RCT examining educational package delivery by midwives and health visitors to reduce baby walker use. The intervention group 64 Midwives and 64 Home Visitors who attended a 90 minute training session that included the epidemiology of baby walker related injuries, and role playing for delivery of the intervention using the materials used in the trial. Follow up questionnaires were completed 6-months post training.

The results revealed that the intervention group had significantly higher knowledge scores than control, as well as significantly more negative attitudes toward walkers and were more likely to give some advice regarding walkers in the antenatal period than those in the control group. There was also some evidence to suggest that the intervention group held more positive attitudes toward baby walker health education than the control group. Although this study was limited to baby walker use, in general injury prevention training was associated with greater knowledge in the intervention group compared to the control group.

Young, R. & Boltri, J. (2005). How do family physicians provide anticipatory guidance during well-child visits? *The Journal of the American Board of Family Practice*. 18:440-444

This study examines how anticipatory guidance was delivered by family physicians during Well Child Visits. A 19-item questionnaire was mailed to 1000 physicians who met eligibility criteria. Results indicated that verbal counselling was the primary method used by physicians in the study. The use of well-child forms, or other prompts, was associated with increased anticipatory guidance discussion.

Physicians who utilized forms from professional organizations or their own organizations tended to provide more handouts compared with physicians using commercial or government materials. Physician preference was to provide anticipatory guidance verbally. Overall, printed handouts were viewed as a supplement to verbal information and were used less frequently. The authors suggest that specific, concrete suggestions, such as putting your baby on their back to sleep, can be effectively delivered

verbally, but general advice is better assimilated by parents when provided in other formats. Limits to this study are that the physicians most interested in anticipatory guidance would be the ones likely returning the survey, creating a possible responder bias. There was also a lower than expected respondent rate. However, this study may be particularly useful in identifying different facilitators for use in clinic settings.

Quality Assessment: Weak

Trowbridge M.J., Sege R.D., Olson L., O'Connor K., Flaherty E., Spivak H. (2005). Intentional injury management and prevention in pediatric practice: Results from 1998and 2003 American Academy of Pediatrics periodic surveys. *Pediatrics* 116 (4), 996-1000.

The purpose of this cross sectional study was to compare results of surveys completed 5 years apart regarding trends in pediatric experience and attitudes related to child abuse, domestic violence, and community violence. Two self-administered surveys were given to randomly assigned pediatricians-one in 1998, and another in 2003. Results were evaluated from these two surveys and compared.

With respect to reporting intentional injuries, pediatricians reported treating intentional injuries increased. In both surveys, the majority of pediatricians agreed that screening for all categories of intentional injuries should be included in routine health care and has a place in preventing violent injuries. Although these factors are concerns for pediatricians, the majority reported feeling unprepared to manage intentional injury and associated issues.

Zuckerman, B., Parker, S., Kaplan-Sanoff, M., Augustyn, M. & Barth, M.C. (2004). Healthy steps: a case study of innovation in pediatric practice. *Pediatrics*. 114(3).

This article described the development, evaluation and future of the Healthy Steps (HS) program, an innovation in pediatric primary care delivery. HS is based on the standards and principles of Bright Futures and the American Academy of Pediatrics Health Supervision Guidelines. HS includes a child development specialist as part of the team, whose services include: time to discuss prevention, home visits, a phone information line addressing developmental and behavioural concerns, new written material and seamless linkages to community resources and parent support groups. Addition of the HS specialist was found to be the most important component. The study included 15 sites, with a total of 5565 infants, and their parents, evaluated 3737 at the age of 2-4 months and 3 years of age. HS had a positive impact on attendance at health visits, nutritional practices, developmental stimulation, appropriate disciplining and correct sleeping position. There were no differences on safety practices in the two intervention groups, but they both had a high overall understanding of these practices.

Healthy Steps proved to be far more cost effective than other early childhood interventions. A major limitation of this study was the cost and logistics of measuring outcomes via direct observation. A major challenge to continuation/expansion of the program is reimbursement. Adapted versions of HS for new sites, and the development of a training kit for pediatric residency programs, are two solutions to address funding. Additional studies include longer-term follow-up, cost-effectiveness, cost/benefit analysis and refining of components.