Multidisciplinary Guidelines on the Identification, Investigation and Management of Suspected Abusive Head Trauma
(Under the CPS Child and Youth Maltreatment Section)

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Endorsing Organizations

This document has been reviewed and endorsed by the following organizations:

Canadian Association of Chiefs of Police

Canadian Institute of Child Health

Canadian Nurses Association

Canadian Public Health Association

Chief Coroners and Medical Examiners of Canada

Child Welfare League of Canada

College of Family Physicians of Canada

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# Contents

Introduction ..........................................................................................................4  
Statement of Purpose ...........................................................................................5  
Intended Audience ...............................................................................................5  
Definition...............................................................................................................5  
Terminology ..........................................................................................................6  
Guiding Principles ................................................................................................6  
Organization of a Collaborative Multidisciplinary Approach  
  to Suspected Abusive Head Trauma ..................................................................6  
Roles and Responsibilities ...................................................................................6  
Information for All Disciplines ...........................................................................7  
Principles to Guide the Intervention with the Child and the Family...............8  
Health Sector .........................................................................................................9  
  Medical, Surgical and Nursing Staff.................................................................9  
  Psychosocial Professionals *(social workers, psychologists, spiritual care providers)* ...........................................................11  
Child Protection Agencies..................................................................................13  
Police....................................................................................................................15  
Medical Examiners and Coroners .....................................................................16  
Crown Prosecutors..............................................................................................18  
Future Directions................................................................................................19  
Glossary ...............................................................................................................20
Introduction

In May 1999, the First Canadian Conference on Shaken Baby Syndrome was held in Saskatoon, Sask. At that conference, a framework for a National Strategy on Shaken Baby Syndrome was developed. The three components of this strategy are: the Joint Statement on Shaken Baby Syndrome; these Multidisciplinary Guidelines; and a communication network on Abusive Head Trauma.

The Saskatchewan Institute on Prevention of Handicaps provided initial leadership in developing the three components of the National Strategy. Many other agencies and individuals provided invaluable assistance and thus, the development of the strategy has been a truly Canadian effort. The Child and Youth Maltreatment Section of the Canadian Paediatric Society was established in June 2004 and committed to the review and dissemination of these multidisciplinary guidelines. To achieve this goal, the current working group was formed.

Since 1999, there has been movement away from the term Shaken Baby Syndrome toward the more inclusive “Abusive Head Trauma.” However other terms are also frequently used (refer to the sections on definition and terminology found on pages 5-6).

The Multidisciplinary Guidelines on the Identification, Investigation, and Management of Suspected Abusive Head Trauma will raise awareness about Abusive Head Trauma. Building on the release of the Joint Statement on Shaken Baby Syndrome*, the development of the guidelines will improve the recognition of Abusive Head Trauma by professionals in the health care system and other community organizations. The Multidisciplinary Guidelines will assist these professionals in taking the appropriate course of action when there is a suspicion of Abusive Head Trauma.

The Multidisciplinary Guidelines on the Identification, Investigation and Management of Suspected Abusive Head Trauma have been prepared in order to provide community organizations with assistance in developing local protocols for managing cases of Abusive Head Trauma. The intent of these guidelines is not to provide instruction to the various disciplines on conducting their discipline-specific functions in a case of suspected Abusive Head Trauma. The guidelines are intended to be generic enough that large or small communities can use them to help develop a response appropriate to their specific circumstances.

* available at: www.phac-aspc.gc.ca/dca-dea/prenatal/shaken_e.html (English version)
www.phac-aspc.gc.ca/dca-dea/prenatal/shaken_f.html (French version)
Statement of Purpose

The purpose of these multidisciplinary guidelines is to equip the health sector, law enforcement, child protection, and other involved disciplines or sectors with a tool to identify, investigate, and initially manage cases of suspected Abusive Head Trauma.

The information in this document is based on best knowledge and practice at the time of publication.

Intended Audience

Professionals who work in health services, child care and education, child protection, police services, and the justice system.

Definition

Abusive Head Trauma (AHT) is a specific form of traumatic brain injury and is medically defined by the constellation of symptoms, physical signs, laboratory, imaging and pathologic findings that are a consequence of violent shaking, impact or a combination of the two. Characteristic injuries, which may not be present in every child include: bleeding in and around the brain (intracranial hemorrhage), bleeding into the retina (retinal hemorrhage), and brain injury. Skull, rib or long bone fractures may also be present. There may or may not be external evidence of trauma. It is usually seen in infants and young children, however, it can occur in older individuals.

The identification of traumatic brain injury relies on medical evaluation of the child and is a medical diagnosis. Clinical and historical elements of the injury may lead to a clinical determination of Abusive Head Trauma. Forensic and psychosocial information obtained through police and child protection investigations are important in clarifying the circumstances in which the child suffered the injury. They shed light on the child's physical and psychosocial environment at the time of presentation and earlier. The investigative process in its entirety, which may include deliberation in the courts, will determine whether the events that led to the injury were abusive. For legal purposes, the identification of children in need of protection and the determination of AHT as a criminal offence rest with the justice system.
There has been considerable controversy surrounding the terminology used to describe this constellation of clinical findings. For the purposes of this document, the term Abusive Head Trauma is used. The reason for shifting from the term Shaken Baby Syndrome is not to detract from shaking as a cause of inflicted head trauma to children, rather not to restrict these guidelines to that mechanism of injury alone. Other commonly used terms include: Shaken Impact Syndrome, Inflicted Head Injury, Non-Accidental Head Injury, Intentional Head Injury, Inflicted Traumatic Brain Injury, Abusive Head Injury, Acceleration-Deceleration Injury, Rotational Force Injury, and Whiplash-Shaken Infant Syndrome.

Guiding Principles

- These guidelines are intended to be used in the best interests of children.

- A multidisciplinary approach affords the opportunity to share complementary perspectives, roles and mandates that lead to a comprehensive case plan.

- Prompt notification of authorities allows for effective collaboration in the investigation and management of cases of suspected Abusive Head Trauma.

- The sharing of information among all professionals involved in the case is encouraged to ensure the best interest of the child. Professionals need be aware that this should be done in conformity with relevant laws, including the Canadian Charter of Rights and Freedoms and provincial and territorial laws pertaining to child protection, the release of information and protection of personal information.

- While the needs of the child are paramount, all interactions must take into account diversity with respect to family, culture, language and abilities.

Roles and Responsibilities

Roles and responsibilities are largely mandated by provincial, territorial and federal legislation, such as:

- Child welfare acts.
- Health acts.
- Coroner’s acts.
- Fatality inquiries Act.
- Criminal Code.

Each discipline brings a specialized area of expertise. It is the goal of these guidelines to highlight best practices for collaboration among the various disciplines with the intent of protecting the child. It is recognized that there will be instances of overlapping roles among professionals.
The presentation of Abusive Head Trauma can be non-specific. It is important to consider the possibility of inflicted head trauma in any child with an altered level of responsiveness not due to an obvious presumptive cause such as meningitis or injury arising from a collision. If AHT is not considered in the differential diagnosis, cases will be missed.

**When Abusive Head Trauma is suspected, and even if not yet confirmed, it is mandatory to provide early notification to child protection so that they can begin their investigation by gathering appropriate background information.**

A member of the health care team should be designated to share information and preferably convene a case conference as soon as appropriate, with all those involved in the initial medical evaluation, child protection and criminal investigations. The purpose of this case conference is to review information and coordinate roles and responsibilities regarding investigation and management of the case.

Priorities of individual members of the multidisciplinary team can be in conflict and this must be addressed through open, respectful communication. The resolution of these conflicts must be guided by the best interest of the child.

Health care providers and investigators must consider alternative explanations and not work solely to confirm an initial suspicion of Abusive Head Trauma. A conclusion as to whether or not the brain injury is AHT requires full and complete multidisciplinary evaluation. The medical diagnosis is based on consideration of the clinical and historical elements available. For legal purposes, the identification of children in need of protection and the determination of AHT as a criminal offence rest with the justice system.

All professionals involved in cases of suspected AHT must be cautious about providing information regarding possible mechanisms of injury to caregivers. It is best to say that the child's injuries are the result of trauma, without further elaboration. Medical information is best shared by one designated individual in consultation with other members of the team.

Members of the team must be aware that their statements and actions may affect the process or outcome of the investigation. Multidisciplinary team members are part of the investigation and every effort should be made to avoid the contamination of evidence.

All professionals must be aware of the stress to the family created by the possibility of a diagnosis of AHT and provide the appropriate empathetic care as with any family where abuse is not a concern.

Members of the team should document comments or behaviours observed in or by family members, caregivers and others that are relevant to the circumstances of the child's condition.

Professionals who are involved in cases of suspected AHT and who have not previously had experience with a case are encouraged to consult with experienced and knowledgeable colleagues.

All professionals who may potentially be involved in cases of AHT require appropriate education and training and should undertake to keep up with current literature on the subject.
Principles to Guide the Intervention with the Child and the Family

- The protection needs of the child and other children in the family are of paramount importance.
- The child will be provided with the best quality of medical care available.
- Care of families is based on compassion and respect, while keeping the child’s best interest as the primary concern.
- It is imperative that the family not be subjected to unnecessary emotional trauma during the course of the intervention.
- Appropriate resources and supports will be provided to the family.
- The outcomes of the child welfare and criminal investigations must be based on the most accurate and comprehensive information available and the best practice of the sectors involved.
Medical, Surgical and Nursing Staff

This section is not intended to be an exhaustive manual on the identification, assessment and management of suspected abusive head trauma. It is meant to provide broad guidelines for health professionals.

I. Identification

Abusive Head Trauma should always be considered in infants without a definite diagnosis to allow for earlier recognition of the often non-specific initial presentation of this condition.

Symptoms can include any of the following: lethargy, decreased feeding, irritability, vomiting, respiratory distress, apnea, seizures or an altered level of consciousness. The accompanying caregiver may have no knowledge of the cause of the child’s symptoms or may not give a complete and accurate history.

A full assessment for suspected AHT should be considered, especially in infants and young children with:

- An acute or chronic injury with inadequate, inconsistent, evolving or no explanation.
- A severe head injury allegedly the result of a short fall or minor trauma.
- An unexplained symptomatic head injury in a child who was well when he/she was last seen.
- Subdural hemorrhage, retinal hemorrhage, rib, skull or metaphyseal fractures.

All health care providers involved in a case of suspected Abusive Head Trauma must be cautious in discussing possible mechanisms of injury with family members or caregivers. The inadvertent suggestion of a potential mechanism may negatively influence the process or outcome of the child protection and criminal investigation.

II. Assessment

A complete physical examination is essential to ascertain the presence of signs that may indicate injury or another diagnosis. It is important to recognize that the absence of external injuries is common, and does not rule out Abusive Head Trauma.

Special attention to examination of the nervous system and eyes is required. An examination of the retina by an ophthalmologist with an indirect ophthalmoscope and with dilated pupils is essential in order to look for and document retinal findings.

The following diagnostic laboratory tests are recommended when AHT is a consideration:

- A complete blood count with platelet number.
- Coagulation studies.

Additional tests may be indicated to confirm or rule out other diagnoses, including but not limited to: blood biochemistry such as glucose and electrolytes, metabolic screen, toxicology and microbiology.

Early neuroimaging of the head is necessary in the evaluation of a child for AHT. Findings may include intracranial bleeding and/or cerebral edema. A CT scan is indicated for acute cases. An MRI may provide additional information of use in delineating the presence and location of intracranial injuries.

A skeletal survey is required to detect bony injury, which may be present with AHT. “Babygrams” are NOT an acceptable substitute for a skeletal survey. Identification of subtle and some acute bony injuries may be facilitated by the use of a nuclear medicine bone scan. A second skeletal survey in 10-14 days can also be used.
Health Sector

In cases of suspected AHT, early consultations may be helpful, for diagnostic purposes, with the following:

- A physician with expertise in child maltreatment.
- An ophthalmologist, preferably one with paediatric expertise, to identify and document the retinal findings with photographs, if possible.
- A neurosurgeon/neurologist, preferably one with paediatric expertise.
- A radiologist/neuroradiologist with paediatric expertise.
- Other consultations suggested by the clinical condition.

A finding of traumatic retinoschisis is strongly suggestive of AHT. In the absence of a history of major accidental trauma or an explanatory medical condition, a child with diffuse multilayered retinal hemorrhages and subdural hematomas must be presumed to have suffered Abusive Head Trauma.

III. Management

The medical management of the child with a head injury will not be discussed here. The level of care required will be determined by the severity of the brain injury and may include transfer to a tertiary care hospital. Ongoing follow-up of brain-injured children is required.

All documentation must be specific, easy to understand and available in the medical chart as soon as possible. Documentation should be detailed and accompanied by diagrams and/or photographs to provide clarity and support possible future court testimony. Caution should be taken in making definitive statements as to the cause of injury before the assessment is complete.

Health care personnel must be aware that in situations where one child is suspected of being abused, siblings or other young children may be at risk. Plans need to be made for the evaluation of these children. The extent of the evaluation will depend on the children's age, history and physical examination. For infants at risk, evaluation should include an eye examination, neuroimaging and skeletal survey, even if the initial physical examination is normal.

Communication with the family and ongoing discussion with the investigators are part of the physician's role. This should include the transmission of medical information as well as learning what restrictions, if any, have been placed on custodial rights to the child, visitation and discharge.

A specific physician should be primarily responsible for ensuring that all information obtained from medical tests and consultant's opinions are made available to the investigating authorities. Where necessary, this physician will also interpret this information or make available the necessary specialists to explain this information. The medical findings must be communicated in terms that are understandable to non-medical personnel. The opinion that the child has an acquired head injury and potentially AHT should be clearly relayed to the investigators and the degree of certainty of the non-accidental cause should also be shared.

Discharge planning should be done in consultation with the child protection authorities.

In the event of a child's death, the post-mortem examination should be conducted in accordance with existing legislation or guidelines for deaths of children under suspicious circumstances (see section on Medical Examiners and Coroners).

Sharing of information among involved professionals enhances the child protection and criminal investigation and must occur within the framework of existing legislation.
Health Sector

Members of the health care team must be aware that their statements and actions may affect the process or outcome of the investigation. If there are concerns about what information can be elicited from or shared with the family, it is best to consult with others involved in the investigation of the case.

Members of the health care team must be aware of the potential for conflicting feelings when assuming the dual roles of providing clinical care for the child and participating in the evaluation of the injury for possible non-accidental causes.

Health professionals may be required to testify regarding their assessments in criminal and/or family court proceedings.

Psychosocial Professionals

(social workers, psychologists, spiritual care providers)

It is vital that the roles of involved hospital personnel are clear throughout the process of investigation, management and follow-up.

In some communities, the roles carried out by hospital-based psychosocial professionals may be performed by other professionals in the community.

In cases of suspected AHT, there may be areas of shared responsibility among psychosocial professionals.

I. Identification

Psychosocial professionals may be in a position to raise the possibility of AHT when it has not been previously suspected or considered. They should ensure that communication between hospital and child protection services and police is facilitated and that all involved have all the information they need to make informed decisions.

II. Assessment

Psychosocial professionals participate in the assessment of:

• Parental/caregiver capacity.
• The needs of the family, including the needs of siblings and other children.
• Risk to the child, siblings and other children.

Psychosocial professionals can take the lead in facilitating case coordination, such as organizing a conference within the hospital that includes appropriate professionals involved in the case.
III. Management

Psychosocial professionals participate in the case management of a child with suspected AHT in the following ways:

- Provision of emotional, physical, financial and spiritual support for the larger family system.
- Organization and participation in case conferencing, including post-case debriefing.
- Communication with family.
- Facilitation of ongoing communication with the child protection and police investigative teams.
- Discharge planning, coordinated with external agencies, especially with regard to placement and follow-up services of the child and/or siblings and/or other children.
- Community referral to agencies that may assist the family, child and/or siblings and/or other children.

Psychosocial professionals must document all interactions in the hospital chart in a timely manner. This documentation should be detailed in order to ensure good communication as the case progresses and to support possible future court testimony.

Sharing of information among involved professionals enhances the child protection and criminal investigation and must occur within the framework of existing legislation.

Psychosocial professionals must be aware that their statements and actions may affect the process or outcome of the investigation. Psychosocial personnel may be asked to help explain medical information to non-medical professionals. This must be done very carefully and without interpretation beyond their level of understanding. If there are concerns about what information can be elicited from or shared with the family, it is best to consult with others involved in the investigation of the case.

A psychosocial professional must be aware of the potential for conflicting feelings when assuming the dual roles of providing care and participating in the evaluation of the child for possible non-accidental injury. Where possible, the psychosocial professional providing direct support to the family may ask that a colleague manage the forensic aspect of the case. The psychosocial professional can assist members of the health care team to remain compassionate and respectful providers of care, should they experience negative reactions to the family because of child maltreatment concerns.

Psychosocial professionals may be required to testify regarding their assessments in criminal and/or family court proceedings.
Child Protection Agencies

I. Identification

Upon receiving a referral with respect to the suspicion of AHT, the child protection agency will immediately notify and collaborate with the police for the purpose of conducting a joint investigation.

**Best practice is immediate collaboration between child protection and police for the purpose of conducting a joint investigation.**

II. Investigation

Throughout the investigation, the child’s safety is the paramount concern. Child protection workers are the ones primarily responsible for the protection of the child, and the police are primarily concerned with the criminal investigation. While the needs of both systems can be achieved by a collaborative approach, at times, the needs of the two systems may be quite different and may require an agreed-upon approach.

A joint and collaborative investigation between child protection and police should begin immediately. Collaborative investigation does not imply a joint interview process. Potential suspects include anyone who has had access to the child. The interviews of these suspects are primarily the responsibility of the police, though child protection workers may need to obtain additional information relating to the safety of all the children involved. Child protection workers should determine, in cooperation with the police, who they will interview and when.

When there are safety issues for children, child protection workers may need to intervene regardless of the status of the criminal investigation. Child protection workers must be particularly aware that in addition to the identified child, other children may also be at risk. Intervention plans should be discussed with the health care professionals looking after the child and the police, prior to their implementation.

Prompt information exchange among involved professionals is critical to the child protection investigation, as child protection workers may be dependent on health care professionals for the medical information and on the police for much of the interview information.

It is crucial for child protection workers to participate as members of the multidisciplinary team in case conferences to ensure that they have all the necessary information to make well-reasoned decisions and to plan the course of the investigation. They should understand the factors that would help distinguish between an accidental or non-accidental traumatic event in terms of mechanism, force and/or timing.

The information uncovered by the investigative team will help identify the circumstances surrounding the child’s injury and risk factors, and will affect plans for the child’s placement on discharge. New information regarding the alleged traumatic event should be shared with health professionals, as this may influence the medical diagnosis. It is imperative that child protection understands both the conclusion of the medical evaluation and the level of certainty for AHT in the case.

III. Management

The child protection worker’s role is to facilitate the assessment of family needs, including parental/caregiver risk, capacity assessments, and treatment as appropriate. There needs to be planning for the transition of families and/or children from one child protection worker to another.

Sharing of information among involved professionals will enhance the investigation and should occur. It must occur within the framework of existing legislation.
Child Protection Agencies

Protection concerns are the responsibility of the child protection worker and must not be delegated to hospital staff. Decisions related to status, access, supervision, and placement upon discharge must be communicated by child protection to the hospital staff and directly to the family. Implementation of child protection decisions, such as apprehension of a hospitalized child, MUST be made in consultation with hospital staff so as to minimize disruption to the child, family, other patients and hospital routine.

Child protection workers, in conjunction with the courts, will determine guardianship, care, and control of a child and access of the caregivers to the child. These decisions may be made in consultation with hospital staff and/or police. The family history and previous involvement with child protection authorities will be considerations.

Child protection workers must be aware that their actions may impact the process or outcome of the criminal investigation.

Child protection workers must be prepared to testify at family court and criminal proceedings.
I. Identification
Upon receiving a referral with respect to the suspicion of AHT, the police will immediately notify and collaborate with child protection for the purpose of conducting a joint investigation.

Best practice is immediate collaboration between police and child protection for the purpose of conducting a joint investigation.

II. Investigation
Throughout the investigation, the safety of children at risk is paramount. Police lead the criminal investigation, but should maintain communication with child protection and designated health care professionals throughout the process. At times, the child protection system will need to address issues that may not be as relevant to the criminal investigation (e.g., obtaining information to ensure the safety of other children at risk). In such circumstances, the two systems will need to discuss their respective needs and come to a satisfactory solution for both.

A joint and collaborative investigation between police and child protection should begin immediately. The police are responsible for the interviewing of potential suspects and witnesses. In view of child protection needs and to obtain information necessary to their investigation, the police should determine, in cooperation with the child protection agency, who will be interviewed, by whom, and when.

The police are responsible for conducting a thorough scene examination.

It is crucial for police to participate as members of the multidisciplinary team in case conferences to ensure that they have all the necessary information to make well-reasoned decisions and to plan the course of the investigation. They should understand the factors that would help distinguish between an accidental or non-accidental traumatic event in terms of mechanism, force and/or timing.

The information uncovered by the investigative team will help identify the circumstances surrounding the child’s injury. New information regarding the alleged traumatic event should be shared with health professionals as this may influence the medical diagnosis. It is imperative that police understand both the conclusion of the medical evaluation and the level of certainty for AHT in the case.

III. Management
Police, often in conjunction with Crown prosecutors, are responsible for determining whether there will be criminal charges. The police should act as a liaison and coordinator between Crown prosecutors and other involved professionals.

Sharing of information among involved professionals enhances the investigation and should occur. It must occur within the framework of existing legislation. In fatal cases the police may be limited as to the information they can share, however, this must not impede the ability of child protection authorities to protect other children at risk.

Police must be aware that their actions may impact the process or outcome of the child protection investigation.

Police may be required to testify in family court as well as in criminal proceedings.
The Chief Medical Examiners and Chief Coroners, Provinces and Territories of Canada on June 22, 2001, in Yellowknife, NWT, approved “Best Practice Guidelines for Child Death Investigation and Review.” The following information was excerpted from those guidelines and amended in light of more recent scientific evidence.

I. Identification

Reporting of child deaths is determined by existing provincial and territorial legislation.

The child and family service agency or department in the province or territory should be notified of all unexplained or unexpected child deaths to determine a history of involvement with child and family services. Similarly, law enforcement authorities should be contacted to check for a criminal record.

Since a child or his/her family may have had contact with child welfare agencies in other provinces or territories, it would be useful to link child welfare records across the provinces and territories or to provide, in some other way, a timely and complete check for any history or contact of the deceased with other child welfare agencies.

II. Investigation

As much as possible, within the restrictions of the legislation, provinces and territories should strive for uniform approaches to data recording for the purpose of facilitating sharing, comparison, and distribution of information.

All children under the age of two years who die in a sudden, unexpected, or unexplained manner should have an autopsy. The autopsy should be complete with the examination of all three body cavities, neuropathology (preferably with removal, retention, and examination of the eyes and spinal cord in addition to the brain), histology, skeletal survey and toxicology.

All autopsies on children should be conducted in a centralized facility by the pathologist most experienced in paediatric forensic autopsies. Where resources are limited, methods of sharing professional resources should be facilitated.

All death investigators should receive specific education and training in the task of investigating child death. This training should include common procedures for: conduct at the death scene; the process for obtaining historical, environmental and medical information about the deceased and his/her family; the medico-legal requirements of the post-mortems; and the policies for inter-agency cooperation and reporting.

III. Management

Each province or territory should develop inter-agency policies, protocols or agreements on information sharing and cooperation in child death investigation. These agreements should define the mandates and responsibilities of the respective agencies with respect to child death investigation and review, and the process and authority for information sharing and cooperation.

Medical examiners/coroners usually provide the results of their assessment to the police as part of the latter’s investigation. In suspected child maltreatment cases where there are other children in the close environment of the deceased, those results may be important for the child protection plan. The mandated obligation to report remains and every effort should be made to provide child protection authorities with the information they need to plan for the safety of the surviving children.

Each province should create a multidisciplinary body or team for the review of all “suspicious” or unexpected child deaths. Bringing a group of experts in various fields such as child protection, law enforcement and health (e.g., clinicians with child maltreatment expertise) together to review a death serves to provide the best possible
understanding of the cause or circumstances that led to a child’s death. It also serves to broaden the scope of knowledge and experience in the review and it provides an opportunity for representatives of various disciplines to learn about the practices, purposes, needs, and responsibilities of the other agencies with regard to child death review.

A report on child deaths should be published annually for the purposes of indicating possible trends in child deaths, making the results of death reviews part of the public record, ensuring that recommendations are followed, and facilitating comparison among and between jurisdictions.

Forensic pathologists may be required to testify regarding their assessments in family court and/or criminal proceedings.
I. Identification

Crown prosecutors experienced in AHT cases should lead the prosecution whenever possible.

II. Investigation

Crown prosecutors will review case information through consultation with police and selected professionals.

III. Management

It is the role of the Crown prosecutor to determine if there is sufficient evidence to proceed to trial.

Crown prosecutors should communicate with medical, child protection and police involved with the case in order to review evidence. Discussion may also include management issues prior to trial, such as bail, child access or specific conditions for visitation.

Crown prosecutors should be encouraged to obtain and prepare appropriate expert witnesses in the field of AHT before trial. These witnesses should be briefed regarding the case-specific issues going into trial (e.g., the symptoms exhibited by the child or the dating of injuries) in order to prepare appropriately before providing testimony. The prosecutor should have a clear understanding of the evidence that an expert will be able to give, including the case features on which the medical opinion of AHT is based and any possible alternative explanation for the child’s condition. It is understood that legal determination of the child’s traumatic brain injury, as a criminal offence, is the responsibility of the court.

Prior to the start of the trial, Crown prosecutors should have a good understanding of the mechanism of injury, the findings and the medical controversies in AHT. With the assistance of expert witnesses and the police, the Crown will make every effort to present AHT and the findings in the child in question in a manner understandable to the judge and jury. This may include the use of visual aids.

Crown prosecutors should avail themselves of medical literature and current research in AHT and should be encouraged to attend related police and medical conferences.
Future Directions

The effective implementation of these guidelines requires ongoing education and training. It is essential that professional schools include information on AHT and its management in the training of all disciplines involved in the prevention, identification and management of child maltreatment.

The creation of a national database of cases of AHT is recommended. This database would have the potential to: contribute to a better understanding of epidemiology; be used for research purposes; contribute to the development of best practice models and consultation networks; and be used in funding initiatives.

The development of a centralized collection of relevant material for attorneys regarding AHT, such as case law, medical literature and expert witness information is encouraged.

The development, implementation and evaluation of a national Abusive Head Trauma prevention strategy is recommended.
Glossary

**Apnea**: cessation of breathing for greater than 20 seconds

**Babygram**: a single X-ray of the entire body

**Bone scan**: a nuclear medicine imaging study where a radioactive isotope injected into the bloodstream is taken up at sites of increased bone activity, such as growth plates or areas of healing

**Cerebral edema**: swelling of the brain

**CT scan (computerized tomography scan)**: an imaging technique used to visualize the brain and surrounding structures in virtual slices

**Fontanel**: the “soft spot” on a baby’s head that exists before the cranial bones have fully fused

**Hemorrhage**: bleeding

**Hematoma**: a localized collection of blood

**Intracranial**: within the skull

**Investigative team**: child protection personnel and police

**MRI (magnetic resonance imaging)**: scan an imaging technique that gives detailed images of the brain and surrounding structures in virtual slices

**Ophthalmologist**: eye specialist

**Retinal hemorrhages**: bleeding in the layers of the back of the eyes

**Retinoschisis**: shearing of the layers of the retina

**Rules of evidence**: legal requirements necessary for evidence to be admitted into court proceedings

**Skeletal survey**: a radiographic study of 12-18 X-rays, imaging all the bones of the body with each film detailing a separate body area

**Subdural hematoma**: a collection of blood in the space between the brain and the outermost membrane covering the brain