GUIDANCE DOCUMENT FOR CELL, TISSUE AND ORGAN ESTABLISHMENTS
Safety of Human Cells, Tissues and Organs for Transplantation

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Health Products and Food Branch
Guidance Document
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Health Canada

HPFB’s Mandate is to take an integrated approach to the management of the risks and benefits to health related to health products and food by:

- Minimizing health risk factors to Canadians while maximizing the safety provided by the regulatory system for health products and food; and,
- Promoting conditions that enable Canadians to make healthy choices and providing information so that they can make informed decisions about their health.

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FOREWORD

Guidance documents are meant to provide assistance to industry and health care professionals on how to comply with governing statutes and regulations. Guidance documents also provide assistance to staff on how Health Canada mandates and objectives should be implemented in a manner that is fair, consistent and effective.

Guidance documents are administrative instruments not having force of law and, as such, allow for flexibility in approach. Alternate approaches to the principles and practices described in this document may be acceptable provided they are supported by adequate justification. Alternate approaches should be discussed in advance with the relevant program area to avoid the possible finding that applicable statutory or regulatory requirements have not been met.

As a corollary to the above, it is equally important to note that Health Canada reserves the right to request information or material, or define conditions not specifically described in this document, in order to allow the Department to adequately assess the safety, efficacy or quality of a therapeutic product. Health Canada is committed to ensuring that such requests are justifiable and that decisions are clearly documented.

This document should be read in conjunction with the accompanying notice and the relevant sections of other applicable guidance documents.
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1. Introduction

The Safety of Human Cells, Tissues and Organs for Transplantation Regulations (CTO Regulations or Regulations) contain safety requirements with respect to processing; storage; record keeping; distribution; importation; error, accident and adverse reaction investigation and reporting. Processing includes donor screening, donor testing, donor suitability assessment, retrieval (except in the case of organs and islet cells), testing and measurements performed on the cells, tissues or organs (CTO) after they are retrieved, preparation for use in transplantation (except for organs), preservation, quarantine, banking, packaging and labelling. These Regulations are intended to result in improved protection of the health and safety of Canadian transplant recipients.

The CTO Regulations are administered by the Biologics and Genetic Therapies Directorate, Health Products and Food Branch, Health Canada. Any questions concerning the Regulations themselves or this guidance document can be sent to this email address: BGTD_PPD_DPP@hc-sc.gc.ca

1.1 Policy Objectives

The purpose of this regulatory framework is to minimize the potential health risks to Canadian recipients of human CTO. This guidance document provides an interpretation of the CTO Regulations.

1.2 Scope and Application

The CTO Regulations apply only to human CTO which are to be used in transplantation. CTO donated for different purposes, such as for education or non-clinical research, are not within the scope of these Regulations.

In this guidance document, both the scope of the CTO Regulations as well as the activities they govern are outlined. It is intended to be an important point of reference: it will help readers determine whether a product and the activities related to it are governed by the CTO Regulations, and give more details as to what they require. The requirements that are discussed in this document are the current active safety requirements for CTO used in transplantation. This guidance document supersedes previous documents.

The CTO Regulations apply to all individuals and establishments in Canada that handle, process, distribute or import human organs or minimally manipulated cells and tissues for homologous use in transplantation in another individual. In order to fully comprehend these Regulations, the Food and Drugs Act (F&DA) as well as the most updated version of the National Standard of Canada entitled Cells, Tissues, and Organs for Transplantation and Assisted Reproduction (National Standard), published by the Canadian Standards Association (CSA), should also be
consulted.

It is the responsibility of the establishment to ensure that they have access to the most recent updated version of the CTO Regulations, the National Standard incorporated by reference into those Regulations and this guidance document.

1.3 Background

The purpose of this regulatory initiative is to minimize the potential health risks to Canadian recipients of human CTO. These Regulations establish safety requirement relating to the processing and handling of these products, resulting in improved protection of the health and safety of Canadian transplant recipients.

The CTO Regulations are based on the National Standard and were developed using a risk management approach as well as information obtained during extensive consultations with provinces, territories and transplantation experts. The National Standard has been made available as a model for other nations through international regulatory cooperation.

The CTO Regulations directly reference sections of the General Standard CAN/CSA Z900.1, entitled Cells, Tissues, and Organs for Transplantation and Assisted Reproduction: General Requirements, along with four of the five subset standards for specific organ and tissue types (i.e. the standards for lymphohematopoietic cells, perfusable organs, tissues, and ocular tissues), thus making them mandatory. It is important to note that the National Standard speaks to various aspects of the donation and transplantation process. However, as Health Canada’s scope in relation to CTO is limited to their safety, every section that is referenced in the CTO Regulations is related to the safety of CTO. Sections of the National Standard that relate to the practice of medicine are not referenced in these Regulations, as practice of medicine falls under provincial jurisdiction.

The CTO Regulations set out safety requirements with respect to processing; (which includes donor screening, donor testing, collection/retrieval, preservation, packaging, labelling, quarantine); storage; record keeping; distribution; importation; error; accident and adverse reaction investigation and reporting. The objective of these Regulations is to maximize the safety of CTO, by clearly stipulating the safety requirements adopted from the National Standard, thus making them mandatory. Referencing the National Standard provides a consistent and safety-focussed regulatory framework that will minimize the risks to Canadians associated with CTO for transplantation.

1.4 CSA National Standard

The Z900 package of the National Standard (http://www.shopcsa.ca/onlinestore/welcome.asp) may be obtained by calling 1-800-463-6727 or may be ordered from the Canadian Standards
Association Web site. Since the CTO Regulations are standard-based, all CTO establishments will need to have access to the most updated version of the standards, in order to have the latest regulatory requirements. These Regulations incorporate by reference the applicable standards as amended from time to time. Amendments to the standards will be sent to establishments who have registered their package with the CSA. For more information on how to register your standards and receive updates, refer to the CSA Standards Update Service page of the standards.

Due to the fact that the field of CTO transplantation continues to change as the science evolves, Health Canada has chosen to base their regulatory framework on standards. The Standards were developed by a committee of transplantation experts and interested stakeholders in a consensus driven process that may enhance future compliance.

All stakeholders play a key role in keeping the standards up-to-date. Each subset of the CSA National Standard contains a Proposal for Change Form, which may be used by stakeholders to submit proposals for change directly to the CSA. The CSA has recommended that the following information be supplied, in addition to the appropriate contact information, in order to facilitate the evaluation of the proposed changes:

- standard/publication number
- relevant Clause, Table, and /or Figure number(s)
- wording of the proposed change
- rationale for the change.

1.5 Acronyms

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<td>CMV</td>
<td>Cytomegalovirus</td>
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<td>CSA</td>
<td>Canadian Standards Association</td>
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<td>CTO</td>
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2. Guidance for Implementation

In this guidance document, the word “should” indicates a recommendation made by Health Canada. Where standards are recommended, decisions regarding their implementation should be based on a risk benefit analysis within the context of the establishment’s operations. It should also be noted that the CTO Regulations specify minimum safety standards that may be exceeded by CTO establishments.

The statements enclosed in the boxes, as well as the definitions below and the labelling requirements tables under sections 30 to 32, are sections taken directly from the CTO Regulations.

2.1 Interpretation (Section 1 of the CTO Regulations)

Definitions
1. The following definitions apply in these Regulations.

This section is a glossary of terms used in the CTO Regulations. All definitions that are found in section 1 of these Regulations can be found here.
“accident”
“accident” means an unexpected event that is not attributable to a deviation from the
standard operating procedures or applicable laws and that could adversely affect the safety
of a transplant recipient or the safety, efficacy or quality of cells, tissues or organs.

“Act”
“Act” means the Food and Drugs Act.

“adverse reaction”
“adverse reaction” means an undesirable response in the recipient to transplanted cells,
tissues or organs, including the transmission of a disease or disease agent.

“banked”
“banked”, with respect to cells and tissues, means processed cells and tissues that have been
determined safe for transplantation and that are stored by the source establishment in its
inventory and available for distribution or transplantation.

“cell”
“cell” means the fundamental biological unit of a human organism that is for use in
transplantation.

“distribute”
“distribute” does not include to transplant.

“donor”
“donor” means a living or deceased person from whom cells, tissues or organs are retrieved.

“donor assessment record”
“donor assessment record” includes the donor screening, any available donor testing results,
information obtained from the donor’s medical records and a copy of the donor consent.

“donor identification code”
“donor identification code” means the unique numeric or alphanumeric designation that is
assigned by the source establishment to a donor under section 56 and that associates each
cell, tissue and organ, or part of one, to that donor.

“donor screening”
“donor screening” means an evaluation based on the donor’s medical and social history and
physical examination, the results of any diagnostic procedures performed, and, if applicable,
the autopsy.
“donor suitability assessment”
“donor suitability assessment” means an evaluation based on the donor screening and
(a) in the case of lymphohematopoietic cells, tissues and organs retrieved from live
donors and of tissues retrieved from deceased donors, all donor testing results; and
(b) in the case of fresh skin, islet cells and organs retrieved from deceased donors,
the donor testing results that are necessary at the time of transplantation.

“donor testing”
“donor testing” means the laboratory tests and measurements done on a donor or donor
specimen to determine all of the following:
(a) whether the donor has or ever had a transmissible disease or is or ever was
infected with a transmissible disease agent;
(b) donor compatibility; and
(c) the degree of functionality of the cell, tissue or organ that is to be retrieved.

“error”
“error” means a deviation from the standard operating procedures or applicable laws that
could adversely affect the safety of a transplant recipient or the safety, efficacy or quality of
cells, tissues or organs.

“establishment”
“establishment” means a person, a partnership or an unincorporated entity, or a part of any
of them, that carries out any of the following activities in respect of cells, tissues or organs:
(a) importation;
(b) processing;
(c) distribution; and
(d) transplantation.

“exceptional distribution”
“exceptional distribution” means the distribution under sections 40 to 42 of cells, tissues or
organs that have not been processed under these Regulations.

“exterior label”
“exterior label” means the label that is affixed to the exterior package.

“exterior package”
“exterior package” means the outermost package in which a cell, tissue or organ is
delivered, transported or shipped.
“general standard”

“homologous”
“homologous”, in respect of a cell, tissue or organ, means that the cell, tissue or organ performs the same basic function after transplantation.

“interior label”
“interior label” means the label that is affixed to the interior package.

“interior package”
“interior package” means the innermost package of a cell, tissue or organ that has a non-sterile exterior.

“lymphohematopoietic standard”
“lymphohematopoietic standard” means National Standard of Canada CAN/CSA-Z900.2.5 entitled Lymphohematopoietic Cells for Transplantation, as amended from time to time.

“medical director”
“medical director”, in respect of an establishment, means a physician or dentist who is licensed under the laws of the jurisdiction in which the establishment is situated to provide health care or dental care and who is responsible for the application of the standard operating procedures and for all medical or dental procedures carried out there, as the case may be.

“minimally manipulated”
“minimally manipulated” means
(a) in respect of a structural tissue, that the processing does not alter the original characteristics that are relevant to its claimed utility for reconstruction, repair or replacement; and
(b) in respect of cells and nonstructural tissue, that the processing does not alter the biological characteristics that are relevant to their claimed utility.

“ocular standard”
“ocular standard” means National Standard of Canada CAN/CSA-Z900.2.4 entitled Ocular Tissues for Transplantation, as amended from time to time.

“organ”
“organ” means a perfusable human organ for use in transplantation, whether whole or in parts, and whose specific function is intended to return after revascularization and reperfusion. It includes any adjunct vessels that are retrieved with the organ for use in organ transplantation.
“organ standard”
“organ standard” means National Standard of Canada CAN/CSAZ900-Z900.2.3 entitled Perfusable Organs for Transplantation, as amended from time to time.

“package insert”
“package insert” means the document that is prepared by the source establishment to accompany a cell, tissue or organ.

The expression “prepared by the Source Establishment” used in the definition of “Package Insert” refers to the package insert being prepared by an establishment in accordance to the Standard Operating Procedures (SOPs) of the Source Establishment.

“processing”
“processing”, in respect of cells, tissues and organs, means any of the following activities:

(a) donor screening;
(b) donor testing;
(c) donor suitability assessment;
(d) retrieval, except for organs and islet cells;
(e) testing and measurements performed on the cells, tissues or organs after they are retrieved;
(f) preparation for use in transplantation, except for organs;
(g) preservation;
(h) quarantine;
(i) banking; and
(j) packaging and labelling.

Retrieval
Under the CTO Regulations, a source establishment is responsible for the retrieval of cells and tissues. In the case of organs, retrieval is not considered processing, and thus is not the responsibility of the source establishment. Organ retrieval is a surgical procedure carried out in a manner that is adapted to the donor organ and the needs of the recipient, and is considered to be within the domain of medical practice. As Health Canada does not regulate medical practice, the retrieval of organs is exempted from the definition of processing.

Post-retrieval testing and measurements performed on the cell, tissue or organ after it is retrieved
This includes but is not limited to bacteriological testing and biopsy results of the cells and
tissues, if performed.

**Preparation for use in transplantation**

Source establishments are responsible for the preparation of cells and tissues for use in transplantation, other than final preparation done by the transplant program at the time of transplantation. Examples of preparation of cells and tissues may include cutting/sizing, dissecting, centrifugation and lyophilization. The depletion of red blood cell, as well as other activities that are part of the processing of cord blood before its cryopreservation, are also included in the preparation for use before transplantation. The preparation of organs for use in transplantation is **not** considered processing, and thus is not the responsibility of the source establishment. As above for retrieval, the preparation that an organ undergoes for use in transplantation is adapted to the donor organ and the needs of the recipient, and thus considered to be within the domain of medical practice. As Health Canada does not regulate medical practice, the preparation of organs for use in transplantation is exempted from the definition of processing and related requirements under these Regulations.

**Preservation**

Preservation refers to the act or process of preserving cells and tissues, or keeping them from deterioration or decay prior to their use in transplantation.

**Banking**

Banking in the context of these Regulations refers to the storing of processed cells and tissues by **a source establishment** once these cells and tissues have been determined to be safe for distribution or transplantation. This does not include situations where cells and tissues are stored by an end user establishment for transplantation after the source establishment has released the cells and tissues from their inventory.

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**“quality assurance system”**

“quality assurance system” means the co-ordinated activities of an establishment that relate to the safety of cells, tissues and organs. It includes

- (a) the standard operating procedures;
- (b) records to demonstrate that the standard operating procedures have been implemented; and
- (c) audit processes to verify that the standard operating procedures are being implemented.

**“scientific director”**

“scientific director”, in respect of an establishment, means an individual who is responsible for the application of the standard operating procedures and for all technical procedures carried out there.
“serious adverse reaction”
“serious adverse reaction” means an adverse reaction that results in any of the following consequences for the recipient:
(a) their in-patient hospitalization or its prolongation;
(b) persistent or significant disability or incapacity;
(c) medical, dental or surgical intervention to preclude a persistent or significant disability or incapacity;
(d) a life-threatening condition; and
(e) death.

“source establishment”
“source establishment” means
(a) subject to paragraph (b), in the case of an organ from a deceased donor, the relevant organ donation organization;
(b) in the case of adjunct vessels that are retrieved with an organ and not used immediately in the organ transplantation, the relevant tissue bank;
(c) in the case of an organ from a living donor or lymphohematopoietic cells that are not banked, the relevant transplant establishment;
(d) in the case of tissues or banked lymphohematopoietic cells, the relevant cell or tissue bank; and
(e) in the case of islet cells, the establishment that prepares the cells for use in transplantation.

“standard operating procedures”
“standard operating procedures” means the component of the quality assurance system that comprises instructions that set out the processes and procedures to follow in carrying out the activities of an establishment.

“tissue”
“tissue” means a functional group of human cells for use in transplantation. It includes the cells and tissues listed in the definition “tissue” in section 3.1 of the general standard, except for paragraphs (g) and (l).

“tissue standard”
“tissue standard” means National Standard of Canada CAN/CSA-Z900.2.2 entitled Tissues for Transplantation, as amended from time to time.

“transplant”
“transplant” means to implant cells, tissues or organs into a recipient.
Additional definitions for the purpose of this guidance document:

“Importer” means an establishment that brings in or facilitates the transfer of CTO from a foreign source located geographically outside Canada and further distributes it to CTO establishments in Canada. Health Canada does not consider an establishment to import if the CTO is from inside Canada (i.e., from a different province or territory).

“Establishment that distributes as an intermediary” means an establishment that facilitates the further distribution of CTO determined safe for transplantation by a source establishment from one establishment to another.

“Retrieval establishment” means the physical building in which the retrieval takes place. This is different from the retrieval team, who performs the retrieval on behalf of a source establishment.

2.2 Application (Sections 2 & 3 of the CTO Regulations)

These Regulations apply only to organs and minimally manipulated cells and tissues.

CTO used for transplantation are generally retrieved from a donor in a functional state, and are expected to maintain the same function in the recipient, if measures are taken to preserve their integrity and function during processing. CTO do however vary significantly with respect to their degree of manipulation, which ranges from minimally manipulated cells and tissues (e.g., ocular tissue, fresh frozen tissues, etc.) to more than minimally manipulated cells and tissues (e.g., cells subject to ex-vivo expansion, differentiation, recombinant DNA technology, etc.). Since the CTO Regulations are based primarily on safety, and do not contain requirements for the evaluation of clinical effectiveness, they are considered adequate only for those tissues that are minimally manipulated, and consequently, are more likely to maintain their integrity and function during processing.

A minimally manipulated structural tissue, as defined in section 1 of the CTO Regulations, must still possess the characteristics that enables it to carry out the function of reconstruction, repair or replacement. Therefore, the separation of the structural tissue into components whose characteristics relating to reconstruction, repair or replacement are not altered is considered minimal manipulation. Similarly, the extraction or separation of cells from structural tissue, in which the remaining structural tissue’s characteristics relating to achieving reconstruction, repair or replacement were unaltered, would also be considered minimal manipulation. Other examples of procedures that would be considered to be minimal manipulation include cutting/sizing, dissecting, grinding and shaping; disinfection by soaking in antibiotic solution; sterilization by ethylene oxide treatment or gamma irradiation; cell separation; lyophilization; and preservation.
(i.e., cryopreservation, freezing, cooling, chemical preservation).

In order to be considered minimally manipulated, and therefore be included in the scope of the CTO Regulations, the structural tissue must not have undergone processing that alters the original characteristics that are relevant to the claimed utility of the product for reconstruction, repair or replacement. A tissue characteristic is “original” if it is present in the tissue in the donor; and it is “relevant” if it could have a meaningful bearing on how the tissue performs when utilized for reconstruction, repair or replacement.

A minimally manipulated cell or nonstructural tissue must still possess the biological characteristics (and thus potentially the function or integrity) that are relevant to their claimed utility. At this time, examples of processing that is considered to be minimal manipulation includes density gradient separation; selective removal of B-cells, T-cells, malignant cells, red blood cells or platelets; centrifugation; cell separation, lyophilization; cryopreservation; and freezing. Appendix 1 contains a decision tree that can help in determining if a cell or tissue falls under the scope of the CTO Regulations.

It is recognized that in some cases, it may be difficult to classify cells and tissues as minimally manipulated or more than minimally manipulated and decisions will have to be made case by case, based on a review of the manufacturing process and/or the availability of clinical data to support their intended use. Inquiries pertaining to the classification of CTO can be sent to Health Canada through the following email address: BGTD_PPD_DPP@hc-sc.gc.ca.

For the purpose of determining which CTO are subject to these Regulations, minimally manipulated cells and tissues could be classified further based on other criteria. For example, in order to be included in the scope of these Regulations, minimally manipulated tissues must not meet any of the criteria specified in Section 3 of the CTO Regulations. Thus, these Regulations apply to only those minimally manipulated cells and tissues that meet all of the following criteria:

- a) they must be intended for allogeneic use, which includes CTO donated for use by relatives of the donor;
- b) they must be intended for homologous use (i.e., they are intended to perform the same function in the recipient as they did in the donor);
- c) they must not have a systemic effect or depend on their metabolic activity for their primary function, with the exceptions noted in subsection 3(1)(d) of these Regulations;
- d) they must not be combined with non-cell or non-tissue products such as artificial elements used for tissue engineering;
- e) their safety, effectiveness and quality must already have been established through historical use or clinical studies.

It should be noted that autologous CTO are not within the scope of the CTO Regulations. They
are not, for this reason, discussed further in this guidance document.

## Non-application — various therapeutic products

### 3. (1) These Regulations do not apply to any of the following therapeutic products:

- (a) cells, tissues and organs that are for non-homologous use;
- (b) cells, tissues and organs that are for autologous use;
- (c) heart valves and dura mater;
- (d) tissues and cells — except for islet cells, and except for lymphohematopoietic cells that are derived from bone marrow, peripheral blood or cord blood — that have a systemic effect and depend on their metabolic activity for their primary function;
- (e) medical devices that contain cells or tissues and that are the subject of investigational testing involving human subjects under Part 3 of the Medical Devices Regulations;
- (f) cells, tissues and organs that are the subject of clinical trials under Division 5 of Part C of the Food and Drug Regulations;
- (g) Class IV medical devices that are regulated under the Medical Devices Regulations;
- (h) blood components, blood products and whole blood, except for cord blood and peripheral blood for use in lymphohematopoietic cell transplantation;
- (i) cells and tissues that are regulated under the Assisted Human Reproduction Act or any of its Regulations; and
- (j) semen that is regulated under the Processing and Distribution of Semen for Assisted Conception Regulations.

## Non-application — Regulations

### 2. No other regulation made under the Act applies to cells, tissues or organs that are the subject of these Regulations.

All CTO intended for transplantation are regulated under the F&DA, which provides the authority for developing regulations that are specific for different types of products. Although all CTO currently used for transplantation have an inherent infectious disease risk, they vary significantly with respect to other criteria. Consequently, CTO are subject to different regulations developed under the F&DA.

In general, cells and tissues are excluded from the CTO Regulations if they meet any of the following criteria:

- a) they are more than minimally manipulated;
- b) they are intended for non-homologous use (i.e., they are not intended to perform
the same function in the recipient as they did in the donor); 

- c) they have a systemic effect and depend on their metabolic activity for their primary function;
- d) they are combined with non-tissue products such as artificial elements used for tissue engineering;
- e) they are used in investigational studies involving humans, in order to establish their safety and effectiveness prior to being used in routine clinical practice (e.g., some emerging cell or gene therapy products have not been used in the clinical setting for sufficient time and in sufficient quantity to establish their safety and effectiveness for the intended use);
- f) they are used in investigational studies involving humans, in order to establish their safety and effectiveness prior to being used in routine clinical practice (e.g., some emerging cell or gene therapy products have not been used in the clinical setting for sufficient time and in sufficient quantity to establish their safety and effectiveness for the intended use).

It is important to note that even though autologous tissues are excluded from the scope of the CTO Regulations, autologous and allogeneic tissues that meet the criteria specified above in letters a) through f) that are for transplantation or assisted reproduction may nonetheless be subject to federal acts such as the F&DA and the Assisted Human Reproduction Act and their regulations.

In contrast to organs and minimally manipulated cells and tissues, more than minimal manipulation of cells and tissues may involve the addition of a wide variety of substances or the removal of biological components during processing. This could potentially alter their safety as well as the original or biological characteristics that are relevant for their claimed utility. Thus, clinical trials or investigational testing involving humans may be required to assess their safety and effectiveness.

With respect to cells and tissues intended for non-homologous use, it may be necessary to conduct clinical studies or investigational testing involving humans to verify whether they are able to perform a function in the recipient that is different from the function they performed in the donor.

As noted above, cells and tissues are excluded from the scope of the CTO Regulations if they have a systemic effect or depend on their metabolic activity for their primary function. When applied to cells and tissues, a systemic function can be interpreted as “a consequence or effect that is either of a generalized nature or that occurs at a site distant or not related to the location of the cell or tissue”. An excellent example of this situation is the transplantation of cells that are capable of producing and secreting hormones that act on diverse cells throughout the body. In general, these cells rely on their metabolic function (e.g, the production of hormones and other substances) for their primary activity.

Although cells and tissues that have a systemic effect are excluded from the CTO Regulations, some cells that meet this criterion have been exempted from this exclusion. Consequently, islet cells, and lymphohematopoietic cells that are derived from bone marrow, peripheral blood and
cord blood, are subject to the CTO Regulations, even though they have a systemic effect and depend on their metabolic activity for their primary function. The exemption of these cells from the exclusion was based on the fact that their safety and effectiveness have already been demonstrated through clinical trials and/or established practice.

Islet cells and lymphohematopoietic cells that are derived from bone marrow, peripheral blood and cord blood, will only be subject to the CTO Regulations if they are minimally manipulated, i.e., if their processing only involves procedures used for pancreas digestion and for the purification of specific cell populations from a mixture of cells. Notwithstanding this exclusion, establishments must fully characterize these products, and evaluate their cell preparations to ensure they meet specifications set for cell number, identity, purity, viability, potency, etc. It should also be noted that if these cells are subject to procedures that are considered more than minimal manipulation (e.g., they are subject to ex-vivo expansion, cell differentiation, genetic manipulation, etc), they will be subject to other regulations, including the Food and Drugs Regulations (F&DR) and/or the Medical Devices Regulations (MDR).

In Canada, demineralised bone that is combined only with a sterilizing, preserving or storage agent is considered minimally manipulated and would be considered a CTO; demineralised bone that is combined with a component other than a sterilizing, preserving or storage agent, is not considered a CTO but is regulated as a medical device. The addition of a handling component such as calcium carbonate or gelatin, used to modify the structure of the body, results in the product being regulated as a medical device under the MDR.

2.3 Prohibition (Section 4 of the CTO Regulations)

<table>
<thead>
<tr>
<th>Transplantation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. (1) Subject to sections 40 to 42, no establishment shall transplant a cell, tissue or organ unless it is processed by a registered establishment under these Regulations and determined safe for transplantation.</td>
</tr>
<tr>
<td>Importation — cells and tissue</td>
</tr>
<tr>
<td>(2) Subject to sections 40 to 42, no establishment shall import tissue or a cell, other than a lymphohematopoietic cell, unless it is processed by a registered establishment under these Regulations and determined safe for transplantation.</td>
</tr>
<tr>
<td>Importation — organs and lymphohematopoietic cells</td>
</tr>
<tr>
<td>(3) An establishment may import an organ or lymphohematopoietic cells from an establishment that is not registered.</td>
</tr>
</tbody>
</table>

The CTO Regulations require that the Health Canada registration number assigned to the source establishment be stated on the package insert included with the CTO as well as on the exterior label.
The term importation refers to the importation of CTO from outside Canada. Health Canada does not consider the shipment of CTO between different provinces or territories as importation.

2.4 Registration (Sections 5 to 14 of the CTO Regulations)

<table>
<thead>
<tr>
<th>Requirement to register</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5.</strong> (1) Every establishment must be registered under these Regulations, except a retrieval establishment and, subject to subsection (2), a transplant establishment.</td>
</tr>
<tr>
<td><strong>Exception</strong></td>
</tr>
<tr>
<td>(2) A transplant establishment that distributes cells, tissues or organs must be registered under these Regulations.</td>
</tr>
</tbody>
</table>

The CTO registration requirements:
- provide Health Canada with information regarding:
  - a) the identity of the establishments, and programs that reside within establishments;
  - b) the types of products being processed, distributed or transplanted and the types of activities being carried out;
  - c) the identity of the source establishments of the CTO imported, processed, or distributed by the registrants;
- require registrants to provide some assurance to Health Canada that they have met the regulatory requirements with respect to organs and minimally manipulated cells and tissues they import, process, or distribute in Canada.

These Regulations require each of the following establishments to be registered: source establishments; establishments that import (other than transplant establishments that don't further distribute), and establishments that distribute CTO within Canada. If a foreign establishment is only involved in the storage and distribution of CTO to Canadian establishments, it is not required to register with Health Canada.

The Human Cells, Tissues and Organs (CTO) for Transplantation Registration Application Form (FRM-0171) (http://www.hc-sc.gc.ca/dhp-mps/compli-conform/info-prod/cell/index-eng.php), in a format prescribed by the Minister, can be found on the Health Canada Web site.

Additional copies are available in hard copy from the:
Establishment Licensing Unit
Health Products and Food Branch Inspectorate
250 Lanark Avenue
Graham Spry Building - Second Floor
Address Locator 2002C
Ottawa, ON K1A 0K9
Application
6. (1) An application for registration of an establishment must be made in the form established by the Minister, be dated and signed by the medical director or scientific director, and contain all of the following information:
   
   (a) the establishment’s name and civic address, and its postal address if different, and the name and telephone number of a person to contact for further information with respect to the application;
   
   (b) in the case of an establishment that previously carried out its activities under another name, that other name;
   
   (c) a description of the types of cells, tissues and organs that the establishment processes, distributes or imports;
   
   (d) a description of the types of processing, distribution or transplantation activities that the establishment carries out or for which it is responsible;
   
   (e) the period during which the establishment has been in operation; and
   
   (f) a statement dated and signed by the medical director or scientific director that certifies that the establishment is in compliance with these Regulations.

Information on request
(2) An establishment must provide the Minister, on written request, with any relevant information necessary to complete the application, by the date specified in the Minister’s request.

Section 6 of the CTO Regulations states the information that is required to be provided by an establishment in its application for registration form. All information requested under these Regulations is mandatory and must be included on the application form.

Establishments dealing with distinct programs (ie. separate live donor and deceased donor programs; separate transplantation programs for youth and adults; separate programs with specialization in different types of CTO; or parent establishments of facilities that perform separate functions such as facilitating donor programs and operating a tissue bank) may benefit by submitting a different application form for each distinct program, as this would ensure the continuity of other services in the event that one program experiences complications.

Part 1 - Reason For Application
Part 1 of the application form must include the reason for the registration. If this is the first time an establishment is applying for a registration number then the establishment must indicate: “Initial Registration”.

If this application is to register a change of information, the establishment must indicate:
“Change of Information” and include its Health Canada registration number. If the application is a response to a renewal notice, the establishment must indicate: “Registration Renewal” and include its Health Canada registration number. In all cases the establishment must also indicate the date it began or will begin activities related to this registration.

**Part 2 - Establishment Information**

The full civic address of the establishment, including the postal code and the postal address if it is different from the civic address, must be entered. The contact information for the person responsible for the establishment is also required. It is essential that the establishment information and the contact information be accurate and complete, so as to ensure that Health Canada is able to communicate with the establishment. This information must be kept up to date.

If the establishment previously carried out its activities under another name, the previous name must be entered in the application form.

**Part 3 - Statement of Compliance**

The declaration section of the application contains the statement: “I hereby certify that the establishment named in this application is in compliance with the *Safety of Human Cells, Tissues and Organs for Transplantation Regulations*.”

The medical director or scientific director must sign and date this declaration in order for the application to be processed. In signing the declaration, the medical or scientific director is attesting to the compliance of the establishment with the CTO Regulations. Making false, misleading, inaccurate or incomplete statements is grounds for refusal to issue a registration number, as per section 8 of the CTO Regulations.

The declaration of compliance signed by a medical or scientific director assures Health Canada that the establishment acknowledges its responsibilities under the CTO Regulations. This provides a level of assurance that CTO imported, processed, or distributed in Canada meet the safety requirements set out in the CTO Regulations, and that procedures are in place to protect the public should a problem be identified. This declaration of compliance does not preclude Health Canada from conducting inspections verifying compliance with the CTO Regulations.

**Part 4 - Activity and CTO Information**

Parts 4, 4A and 4B of the registration application form provides space to detail the types of CTO being processed, imported and/or distributed by an establishment, and the types of activities it carries out. Foreign establishments that export to Canada should only list the products exported to Canadian establishments as well as the corresponding activities.

Part 4 is in a table or matrix format. A separate matrix is provided for activities concerning live and deceased donors.
Each applicable activity has a respective column on the left side of the page. An X is to be placed in the appropriate column for the type of CTO being processed, imported and/or distributed under that activity. The column entitled “Other” on the far right of the page is provided for the entry of any CTO not listed in the table. Each type of CTO entered in the “Other” column are to be identified with a different letter of the alphabet (A, B, C, etc). In the space below the table, definitions are to be added for each letter; additional pages can be included if required.

Establishments should check each activity for which they are responsible, including the ones that are performed on their behalf by another establishment. Establishments that are performing activities for another do not have to check these activities on their registration form.

An example of the table is given below and in the first row of the matrix. In this example, “Donor Screening” is being performed for heart, kidney, bone, cornea, and A in Other.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Heart</th>
<th>Kidney</th>
<th>Liver</th>
<th>Lung</th>
<th>Gastrointestinal</th>
<th>Pancreas</th>
<th>Bone</th>
<th>Cartilage</th>
<th>Tendon</th>
<th>Skin</th>
<th>Fascia</th>
<th>Veins</th>
<th>Atria</th>
<th>Pericardium</th>
<th>Aortic / Pulmonary Conduits</th>
<th>Cornea</th>
<th>Sclera</th>
<th>Whole globes</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donor Screening</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Each row has to be completed for all applicable activities.

Should the applicant be unsure of the classification of the activities performed by their establishment, a limited space is provided in Part 4A to include a description. This additional information should not include the submission of a detailed description of all the activities as previously listed in Part 4, but only the details that may be needed to clarify the information provided in Part 4 or to identify an activity not listed in Part 4.

The information in Part 4A should be limited to a description of the types of processing, distribution or transplantation activities that the establishment carries out if this information was not already provided in Part 4. Details of the safety and efficacy of the products are not required for registration and should not be submitted. Information that is not required, nor requested, will be returned to the registration applicant at their cost. It is recommended that the applicant hold onto such information until it is requested, and provide only a note in Part 4A that it is available if needed.

Proprietary names of products should be provided in Part 4B of the application form.

**Part 5 - Information related to “Other Entities”**

As per subsection 6(d) of the CTO Regulations an establishment must indicate the activities for
which it is responsible. In some cases activities may not be performed at, or by, the establishment. Part 5 provides space for an establishment to indicate other entities that perform activities on its behalf, whether under contract or not. This part of the application should be duplicated as many times as is required in order to provide enough space to list information for all relevant establishments.

All completed applications should be sent to the following address:
Establishment Licensing Unit
Health Products and Food Branch Inspectorate
250 Lanark Avenue
Graham Spry Building - Second Floor
Address Locator 2002C
Ottawa, ON K1A 0K9
Fax: (613) 957-4147

Further inquiries pertaining to the status of an establishment’s registration can be directed to the following email address: CTO_registration@hc-sc.gc.ca. All other inquiries can be directed to: BGTD_PPD_DPP@hc-sc.gc.ca.

All CTO Registration numbers expire on December 31 of the year following the year in which it was issued.

For example:
• All certificate of registration issued in January 2008 will expire on December 31st, 2009.
• All certificates of registration issued in December 2008 will expire on December 31st 2009.

Notice of the requirement to complete an application for renewal will be provided by the Establishment Licensing Unit of Health Canada prior to the expiry date of the issued certificate of registration. When submitting an application, the establishment must ensure all relevant changes are appropriately referenced. Should an establishment not receive a notification of renewal, it should contact the Establishment Licensing Unit prior to the expiry date of its certificate of registration: CTO_registration@hc-sc.gc.ca.
Refusal

8. The Minister may refuse to register an establishment if he or she has reason to believe that any of the information provided by the establishment in its application is false, misleading, inaccurate or incomplete.

If issuance of a registration number is refused due to the conditions listed in section 8 of the CTO Regulations, the applicant will be notified and given an opportunity to be heard.

When registration may be cancelled

9. The Minister may cancel a registration in the following circumstances:
   (a) the application for registration contains false or misleading information;
   (b) the Minister receives a notice under section 13 that states that the establishment has ceased an activity;
   (c) the establishment has not complied with a request for additional information made under section 14; or
   (d) the Minister has reason to believe that the establishment is not in compliance with these Regulations or that the safety of cells, tissues or organs has been or could be compromised.

Actions before cancellation

10. (1) The Minister must take all of the following actions before cancelling a registration:
   (a) send a written notice to the establishment that sets out the reasons for the proposed cancellation and specifies the corrective action, if any, that the establishment must take and the time within which it must be taken; and
   (b) give the establishment an opportunity to be heard in writing with respect to the cancellation.

Notice of cancellation

(2) If the establishment does not carry out the corrective action to the Minister’s satisfaction, or does not carry it out within the required time, the Minister must send a notice of cancellation of the registration that includes the reasons for the cancellation and the effective date.
Action by establishment when registration cancelled

11. On the cancellation of its registration, the establishment must immediately take both of the following steps:
   
   (a) cease carrying out the activities that were authorized by the registration;
   
   and
   
   (b) notify the establishments to whom it has distributed a cell, tissue or organ or made a donor referral, during the period specified in the notice, of the cancellation, the reasons for the cancellation and the effective date.

Cancellation in urgent circumstances

12. (1) Despite section 10, the Minister may cancel a registration immediately if he or she considers it necessary to do so in order to prevent injury to the health or safety of the public, by giving the establishment a notice of the cancellation in writing that states the reasons for the cancellation.

Request to reconsider

(2) An establishment may, in writing, request the Minister to reconsider the cancellation.

Opportunity to be heard

(3) The Minister must, within 45 days after receiving a request for reconsideration, provide the establishment with an opportunity to be heard in writing with respect to the cancellation.
Ongoing requirement to notify Minister

13. (1) Subject to subsection (2), an establishment must notify the Minister in writing of any change in the information provided in its application for registration, within 30 days after the change is made.

Cessation of activity

(2) If an establishment ceases to process, distribute or import cells, tissues or organs, it must notify the Minister in writing of that fact, within 90 days after it ceases that activity.

Contents of notice

(3) The notice must be dated and signed by the medical director or scientific director and include all of the following information:

(a) the establishment’s name and civic address, and its postal address if different;
(b) the establishment’s registration number;
(c) the date on which the change or cessation became effective; and
(d) in the case of the cessation of an activity, the disposition of the cells, tissues and organs in the establishment’s possession.

The notification of changes identified under section 13 of the CTO Regulations should be sent to the Establishment Licensing Unit of the Inspectorate of Health Canada at the address specified in the guidance under section 6 of these Regulations. It is recommended that establishments use the Human Cells, Tissues and Organs (CTO) for Transplantation Registration Application Form (FRM-0171) (http://www.hc-sc.gc.ca/dhp-mps/compli-conform/info-prod/cell/index-eng.php) provided on the Health Canada Web site for this process.

The notice must be signed and dated by the medical or scientific director and include all of the information stated under subsection 13(3).

Additional information

14. An establishment must provide the Minister, on written request, with any additional relevant information to demonstrate that the activities it carries out are in compliance with these Regulations, by the date specified in the Minister’s request.

Section 14 of the CTO Regulations can be applied in order to require an establishment to provide any information that is relevant to whether it is in compliance with the CTO Regulations.
2.5 **Source Establishment** (Section 15 of the CTO Regulations)

**Responsibility**

15. A source establishment is responsible for the processing of cells, tissues and organs, whether the processing is carried out by the source establishment itself or by another establishment, and for determining whether the cells, tissues and organs are safe for transplantation.

The source establishment is responsible for the processing of CTO. A source establishment is ultimately responsible for determining the safety of the CTO for transplantation, even if some or all of the processing activities were carried out by another establishment on behalf of the source establishment.

The determination of the source establishment in a given situation depends on the CTO in question, not the donor of the CTO, or the establishment of origin or facility where the donor was identified. Source establishment refers to the source of the CTO that has undergone all processing and is determined safe for transplantation.

For organs from a deceased donor, the organ donation organization (ODO) is the source establishment responsible for processing the organs. This reflects current practice in that the ODO will typically carry out the screening and testing of the donor, or donor suitability assessment, a pivotal component in determining whether or not an organ is safe for transplantation.

When an organ is retrieved from a deceased donor, it is common practice to simultaneously retrieve blood vessels from that donor, for the prospect of aiding organ transplantation. Under the CTO Regulations, these vessels are referred to as adjunct vessels and they are subject to the same regulatory requirements as organs.

If the adjunct vessels are not used immediately in the transplantation of the organ with which they were retrieved, they must be stored by a tissue bank and used within a scientifically based predetermined number of days. Under these circumstances, the tissue bank assumes the role of a source establishment for these vessels and, among other things, is responsible to ensure that appropriate storage and documentation is provided for these vessels if they are to be subsequently transplanted. *The adjunct vessels remain regulated as organs under the CTO Regulations and are not considered or regulated as tissues.* As such, the tissue bank must treat the vessels as if they were organs and perform activities such as receiving and reviewing relevant organ donor suitability assessment information prior to transplantation, which is especially important in the cases where the vessels are transplanted in an individual other than the original organ recipient.
Health Canada recognizes that, in some cases, adjunct vessels will need to be released prior to a tissue bank’s review of the documentation. Under these conditions, the transplanting physician may authorize the exceptional distribution of these vessels, if appropriate, under sections 40-42 of the CTO Regulations. In the case where exceptional distribution is applied to an organ of a donor, the exceptional distribution process does not have to be repeated for the use of the adjunct vessels retrieved from that same donor if the recipient of the organ and the vessels is the same person, and if the reason for the exceptional distribution is the same. The documentation requirements of sections 40-42 of the CTO Regulations must however be fulfilled.

For organ donation from a living donor, the source establishment responsible for processing of CTO is the relevant transplant establishment, which will need to register. This reflects the fact that ODOs are not usually involved in directed donations (donations where the donor is donating to a specific recipient, usually a family member or someone related to the donor) from living donors. Rather, the transplant program typically carries out the donor suitability assessment and determines whether or not the organ is safe for the intended recipient. The same is true for allogeneic (for use in another individual) lymphohematopoietic cell donations that are not banked.

While it is recognized that for unrelated lymphohematopoietic cell donations, the different activities carried out by the establishments involved may be on a continuum, in this case the source establishment is the transplant establishment, which will need to register. For example, even if the testing is carried out by OneMatch, formerly known as the Unrelated Bone Marrow Donor Registry, the transplant establishment is responsible for reviewing these results and determining the safety of the donation.

For all tissues and lymphohematopoietic cells that are banked, the tissue or cell bank is the source establishment responsible for the processing and safety of the cells and tissues. This bank may be either a specific or a comprehensive tissue or cell bank. It should be noted that the term “banked” in this context does not refer to cells and tissues that are obtained from a source establishment and stored by the end user for a period of time before use in transplantation. Under the CTO Regulations, “banked” cells and tissues are those that have been determined to be safe for transplantation, are stored by the source establishment in their inventory and are available for distribution and transplantation.

Here is an example to illustrate the definition of source establishment in the case of a multiple tissue/organ donor, where there may be more than one source establishment for a given donor. For example, a case where bone, ocular tissue, kidney and liver were to be retrieved from a donor:

As per the definition in the CTO Regulations, the ODO would be the source establishment responsible for the processing and safety of the organs, whereas the processing and safety of the bone and ocular tissue would be the responsibility of the bone and eye bank, respectively. Similarly, if the bone and ocular tissue were retrieved for a comprehensive tissue bank, then that
tissue bank would be responsible for the processing and safety of the tissues.

It is important to note that, although an establishment is the source establishment in one circumstance for a particular CTO, it does not mean that the establishment will necessarily be the source establishment for all CTO that it handles or processes. A good example of this is an ODO. An ODO is the source establishment for organs from deceased donors, and while it may be involved in tissue donation, it is not the source establishment for tissue.

Each establishment must rely on the Regulations and the definitions contained within them aided by this guidance document in order to determine its responsibilities for the safety and processing of CTO under these Regulations. There should be an agreement among all establishments involved in processing the CTO with respect to determining which establishment will function as the source establishment.

Given the definition and role of source establishments defined within the CTO Regulations, Health Canada recognizes that, by default, source establishments will distribute CTO. Cases where “establishments that distribute” is stated in the CTO Regulations refer to source establishments, establishments that import for further distribution as well as establishments that distribute as an intermediary between other CTO establishments (this includes but is not limited to establishment that distribute CTO from a source establishment to a transplant establishment, from an importer to a transplant establishment and between different transplant establishments), whether that distribution is physical or only as a facilitator.

2.6 Processing (Sections 16 to 27 of the CTO Regulations)

The extent of the responsibility of source establishments for the processing and safety of CTO under section 15 of the CTO Regulations is determined by the meaning of the term “processing”. Processing as defined in section 1 of the CTO Regulations includes the following activities (see definitions for a more detailed description of each activity).

(a) donor screening;
(b) donor testing;
(c) donor suitability assessment;
(d) retrieval, except for organs and islet cells;
(e) testing and measurements performed on the cells, tissues or organs after they are retrieved;
(f) preparation for use in transplantation, except for organs;
(g) preservation;
(h) quarantine;
(i) banking; and
(j) packaging and labelling.
Each of these activities are described in more detail under the applicable regulatory requirements below. Information about donor suitability assessment, including donor screening and testing, is organized as follows:

- section 18 contains the general requirements for all CTO except lymphohematopoietic cells;
- sections 20, 21 and 22 contain additional requirements regarding tissues, ocular tissues and organs, respectively; and
- section 23 contains all the requirements for lymphohematopoietic cells.

The responsibility of source establishments for the activities described applies whether or not the source establishment carries out the activities itself, or if they are performed by another establishment on behalf of the source establishment.

**Documented evidence**

16. An establishment must have documented evidence that demonstrates that the activities, processes and technical procedures that it uses in processing cells, tissues and organs will consistently lead to the expected results.

In the context of these Regulations, documented evidence refers to activities, processes and technical procedures that have been validated by the establishment, or, as appropriate, that have been established in standards developed by recognized professional organizations, based on established practice, or that are supported by information available in the scientific literature.

**When pooling permitted**

17. An establishment may only pool cells, tissues or organs from different donors during processing to create a therapeutic dose for a single recipient.
18. In assessing the suitability of a donor of cells, tissues or organs, except a donor of lymphohematopoietic cells, an establishment must perform all of the following steps:

(a) obtain the donor information and history in accordance with sections 12.2 and 12.3 of the general standard;
(b) determine that the donor is not unsuitable to donate on the basis of the contraindications or exclusion criteria set out in section 13.1.3 of the general standard and in Annex E to that standard;
(c) perform a physical examination of the donor in accordance with section 13.2 of the general standard; and
(d) perform appropriate and effective tests for the diseases or disease agents specified in section 14.2.6 of the general standard.

2.6.1 Donor Suitability Assessment
Donor suitability assessment (section 12.2 of the general standard), which is intended to elicit risk factors, is generally based on a medical and social history, clinical status, physical examination, tests and autopsy (if performed). Documentation of this assessment must include all the elements specified in section 12.3 of the general standard.

In cases where an autopsy is to be performed on a deceased donor, and it is determined that the integrity of the CTO will be compromised by the time the report is completed, establishments need not wait for the review of the final report of the autopsy results. Rather, the presumed cause of death and other pertinent preliminary autopsy findings would be taken into consideration and documented.

2.6.1.1 Donor Screening
Donor screening is one component of donor suitability assessment and is intended to elicit general health information and identify risk factors (e.g., infectious disease risks) that could potentially impact the safety of the CTO. This risk assessment is based on the donor’s medical and social history, clinical status, physical examination, tests and autopsy (if performed). The information regarding the donor’s medical/social history and clinical status can be obtained through a donor interview and a review of the donor’s medical records or charts. The interview should be conducted using a medical/sexual/social history questionnaire that includes the applicable contraindications/exclusion criteria and other relevant questions required as per the CTO Regulations, and should be documented in the form of a checklist where the response/outcome for each criterion is recorded. If the donor is deceased or is unable to participate in the interview, the interview may be carried out with one or more individuals who can provide the necessary information, such as the donor’s next of kin or nearest available relative, an individual with a relationship with the donor (e.g., caretaker, friend, partner), a
member of the donor’s household, or the donor’s primary physician. The interview may take place in person or by telephone.

An establishment must develop and maintain SOPs for all steps performed during donor screening, including those governing the conduct of the donor medical/sexual/social history interview and the administration of a donor screening questionnaire(s). If a questionnaire developed by a professional organization is to be used, an establishment must review the questionnaire to determine if it meets all the requirements of the CTO Regulations for donor screening.

2.6.1.2 Contraindications/Exclusion Criteria
The conditions and behaviours set out in section 13.1.3 and Annex E of the general standard may increase the risk that a donor may have and/or could potentially transmit an infectious disease to the recipient. For this reason, donors shall be excluded from donating CTO on the basis of these contraindications/exclusion criteria, except in cases where exceptional distribution is used (see sections 40 to 42 of the CTO Regulations for more information).

Examples of neurological diseases of unestablished etiology that are listed as exclusion criteria in section 13.1.3 of the general standard include, but are not limited to, multiple sclerosis, Alzheimer’s, Parkinson’s, and amyotrophic lateral sclerosis or Lou Gehrig’s disease.

Examples of prion related disease that are described as exclusion criteria in section 13.1.3 of the general standard include, but are not limited to, Creutzfeldt-Jakob disease, variant Creutzfeldt-Jakob disease, and other transmissible spongiform encephalopathies.

Viruses associated with meningitis, which is listed as an exclusionary criteria in section 13.1.3 in the general standard include, but are not limited to, enteroviruses, Mumps Virus, Herpes Simplex Virus, West Nile Virus (WNV), Varicella Zoster Virus.

Examples of degenerative neurologic disorders of viral or unknown etiology that are described in section 13.1.3 of the general standard include, but are not limited to, Parkinson’s disease, subacute sclerosing panencephalitis, progressive multifocal leukoencephalopathy and amyotrophic lateral sclerosis or Lou Gehrig’s disease. Viruses that can be associated with dementia or degenerative neurologic disorder include the human immunodeficiency virus (HIV) and HTLV.

2.6.1.3 Physical Examination
Prior to the donation of CTO (with the exception of lymphohematopoietic cells) from a potential donor, a physical examination must be performed by the medical director or his/her designate, or by a physician or his/her designate, that is involved with the donor’s medical care (in accordance with section 13.2 of the general standard). In the case of a deceased donor, the mandatory physical examination includes a recent antemortem or postmortem physical examination, a directed physical examination and may include a limited autopsy, if performed. The directed
examination should include any of the applicable items included below that would assist in determining whether there is evidence of high risk behaviour.

The following physical evidence may indicate high risk behavior that is associated with the presence of a transmissible disease and should be assessed in a directed physical examination performed on all potential deceased CTO donor:

- signs of sexually transmitted diseases such as genital ulcerative disease, herpes simplex, syphilis, chancroid;
- for a male donor, physical evidence of anal intercourse including perianal condyloma;
- physical evidence of nonmedical percutaneous drug use such as needle tracks, including an examination of tattoos as they may cover needle tracks;
- physical evidence of recent tattooing, ear piercing, or body piercing;
- disseminated lymphadenopathy (swollen lymph nodes);
- oral thrush;
- blue or purple spots consistent with Kaposi's sarcoma;
- unexplained jaundice, hepatomegaly (hepatomegaly may not be apparent in a physical examination unless an autopsy is performed) or icterus.
- physical evidence of sepsis, such as unexplained generalized rash;
- large scab consistent with recent smallpox immunization;
- eczema vaccinatum;
- generalized vesicular rash (generalized vaccinia);
- severely necrotic lesion consistent with vaccinia necrosum; and/or
- corneal scarring consistent with vaccinial keratitis.

In the case of a potential living donor, if an examination of the donor was previously performed for other reasons, findings of such an examination can be reviewed and documented in the donor’s records in lieu of a new physical examination. If any social or medical history is suspect, or if a risk factor is identified in the potential donor, a directed physical examination needs to be performed. If the conclusions of this directed physical examination confirm the suspect history or the presence of risk factors, the CTO can only be released under exceptional distribution.

The physical examination of skin donors shall include documentation of findings and conditions that may affect the quality or quantity of skin retrieved.

An establishment must have SOPs describing the conduct of the physical examination and directed physical examination of a donor.

2.6.1.4 Donor Testing

**General Requirements**
Donor testing includes laboratory tests for transmissible disease agents (e.g., HIV, hepatitis B virus (HBV) and hepatitis C virus (HCV)); tests performed to determine the donor’s blood type
(i.e., ABO group and Rh type) and human leukocyte antigen (HLA) type; or any procedures done
to evaluate or provide information on the CTO itself. The guidance provided below for donor
testing focuses on laboratory tests for the various transmissible disease agents applicable to CTO
donors.

For information related to donors of lymphohematopoietic cells, refer to section 23 of the CTO
Regulations.

Time Frame for Specimen Collection
Unless otherwise specified below, blood specimens for infectious disease testing must be
collected from the donor or the birth mother of a fetal or infant donor if applicable, at the time of
donation, or within 7 days before or after the donation. For deceased donors, the collection of
specimens within 7 days before the donation will allow testing of premortem specimens with test
kits licensed for testing live donors.

In the case of a tissue donor, the infectious disease tests must be performed on blood specimens
taken at the time of donation or within 7 days prior to donation for deceased donors, and within
14 days of donation for living donors.

In the case of living organ donors, infectious disease tests must be performed on blood
specimens taken within one month prior to surgery. It is recommended that living donors be
retested at the time of donation, even if the results will not be available before the time of
transplantation

Establishments must have SOPs that specify the time frames for the collection of blood
specimens from donors of each type of CTO.

Infectious Disease Testing
All source establishments must ensure that infectious disease testing is performed in accordance
with the following:

1) Testing shall be performed by a laboratory that meets applicable laws and regulations
of the authority having jurisdiction over that laboratory.
2) The tests must be performed using test kits that are licensed as required in sections 25
and 26 of the CTO Regulations.
3) The testing laboratories must follow the test kit manufacturer’s instructions with
respect to the following:
   a) the collection, handling, and storage of blood specimen;
   b) the time frame within which samples must be tested, if applicable;
   c) the procedure for testing and
   d) the interpretation of the test results.
4) Establishments must have SOPs for the conduct of infectious disease tests that
   conform with the manufacturer’s instructions. In cases where testing is performed by a
   contract laboratory or another establishment, the source establishment must ensure that
the SOPs of the testing laboratory conform with the test kit manufacturer’s instructions.

**Interpretation of Infectious Disease Test Results**

Donor eligibility determination shall include the interpretation of the infectious disease test results as outlined below:

1) For HIV-1 and 2, HBV, HCV and HTLV-I and II, CTO shall not be released for transplantation if the donor’s specimen is repeatedly reactive or positive for any of the markers of these infectious disease agents **[note: repeatedly reactive means a single blood sample from the donor is reactive on initial testing (i.e., initially reactive), and either one or both samples are reactive when the same test (i.e., using the same test kit from the same manufacturer but not necessarily the same lot) is repeated in duplicate on the same blood sample]**. In cases where additional tests are performed to confirm or supplement the repeat reactive test results (e.g., for the purpose of donor or next-of-kin notification), CTO shall not be released for transplantation even if the confirmatory or supplemental test results are negative or non-reactive.

2) For syphilis, CTO may be released for transplantation if the donor’s blood sample is reactive for a nontreponemal test, but negative or nonreactive for a treponemal-specific confirmatory assay. If only the treponemal-specific assay for syphilis is performed, the CTO shall not be released for transplantation if the donor’s specimen is reactive or positive.

3) For cytomegalovirus (CMV) and Epstein-Barr virus (EBV), CTO may be released for distribution if a donor’s blood sample is positive or reactive. The test results for these infectious agents are important in selecting CTO for specific patients, and must be communicated to the transplant physicians.

4) For toxoplasmosis tests for heart donors, the determination of donor eligibility is not based on the test results, the tests may therefore be performed retrospectively. However, the test results are important for the monitoring of heart recipients and must be communicated to the transplant physicians when they become available.

5) If an establishment performs additional tests that are not mandatory (e.g., nucleic acid testing (NAT) for HIV-1, HCV and WNV, CMV and EBV for organ donor, etc), or obtains such test results for a shared donor from another establishment, the results must be taken into consideration when determining donor eligibility if they are available prior to the release of CTO.

It should be noted that, in uncommon circumstances, exceptional distribution may be used if the donor specimen is repeatedly reactive or positive for the markers of infectious disease agents. More information on exceptional distribution can be found in sections 40 to 42 of the CTO Regulations.

Results of all tests, including those that are optional, must be included in the donor records. Establishments must have SOPs for the interpretation and handling of all test results, including the communication of test results to transplant physicians or to establishments to which the CTO are distributed. Procedures must also be established for handling the results of optional tests that
become available after the CTO has been released for distribution, and must include notification of transplant physicians or establishments to which the CTO is distributed.

**Archived Samples**
The CTO Regulations do not require the collection of samples for archiving as this has no impact on the safety of CTO that meet current regulatory requirements. It is however recommended that cell, tissue, plasma or serum samples from each donor be archived for retrospective testing of donors of cells and tissues that are still in inventory when new tests are adopted for screening donors for existing or emerging pathogens. The requirement for such retrospective testing will be based on the degree of safety enhancement afforded by the new tests, and the availability of tests that are appropriately validated or approved under the MDR for testing frozen specimens. If such retrospective testing is required, Health Canada will inform CTO establishments.

If establishments chooses to archive samples, they must have SOPs for the collection and storage of samples for archiving. Samples must be stored frozen, and should be kept for at least 5 years. Establishments must have documentation to show that the samples are maintained at the appropriate temperature throughout the storage period.

Establishments may not be able to use and/or distribute cells and tissues that are available in their existing inventory when new tests are introduced and they are unable to perform retrospective testing using archived donor samples that have been stored appropriately.

**Tests that are considered appropriate and effective**

**Mandatory Testing**
All CTO donors must be tested and found negative for the infectious disease agents listed in the sections of the general standard referenced in the CTO Regulations, using appropriate and effective tests. A test is considered appropriate and effective if (i) it is licensed for the detection of the infectious disease agent or marker in accordance with the licensing requirements specified in sections 25 and 26 of the CTO Regulations; (ii) it is used in accordance with the test kit manufacturers instructions; and (iii) it is used for the detection of an infectious disease marker that is relevant at the time testing is performed. A list of such appropriate infectious disease markers is provided below.

Section 14.2.6.1 of the general standard specifies the infectious disease agents for which testing must be performed for all CTO donors, and requires the performance of any additional tests specified in the subset standards. The following sections provide a list of infectious disease markers that are considered appropriate and effective for the detection of donors infected with the disease agents listed in the general and subset standards. This list may be revised when new infectious disease tests become licensed, or when new information necessitates an amendment.
Health Canada considers the following infectious diseases markers to be appropriate and effective in order to comply with section 14.2.6.1 of the general standard:

a) Antibodies to the human immunodeficiency virus, types 1 and type 2 (anti-HIV-1 and anti-HIV-2);
b) Hepatitis B surface antigen (HBsAg);
c) Total antibody to hepatitis B core antigen (anti-HBc, IgG and IgM);
d) Antibodies to hepatitis C virus (anti-HCV).

In the case of fetal or infant donors, the birth mother must be tested for infectious disease agents, in order to address vertical transmission of infectious agents from the birth mother to a donor who is less than 18 months old, or who has donated within 12 months beyond breast-feeding (section 14.2.6.2 of the general standard).

Establishments must have SOPs that describe which infectious disease tests must be performed, and when testing of the birth mother is required for fetal and infant donors.

**Recommended Testing**

Donors should also be tested for HIV-1 and HCV using NAT, if available. In particular, NAT should be performed in circumstances where it is clinically indicated, for example, if a decision is made to use exceptional distribution for a CTO from a donor with a history of high risk behaviour and a negative serological test for HIV and HCV. Infant donors should also be tested for infectious disease agents, if possible.

CTO donors should be tested for WNV using a test kit that has been licensed for the detection of viral nucleic acid. Testing could be performed on a seasonal basis if specific procedures are in place to determine the time frames for seasonal testing and to determine other circumstances when testing for WNV may be required outside of these time frames, e.g., when a donor has travelled to a “high risk” area.

A test kit has been licensed by Health Canada for the detection of WNV ribonucleic acid in plasma specimens from both living and deceased donors.

The Medical Device Bureau of the Therapeutic Products Directorate is the Canadian federal regulator responsible for licensing in accordance with the F&DR and the MDR. [Medical Devices Active Licences Listing (MDALL)](http://www.hc-sc.gc.ca/dhp-mps/md-im/licen/mdlic-eng.php), a database containing all licensed Class II, Class III and Class IV Medical Devices for sale in Canada, can be found on the Health Canada website. At the device prompt in the Medical Devices Active Licences Listing (MDALL), “donor screening” can be entered to access a list of licensed test kits approved for donor screening.
Plasma dilution algorithm

19. In assessing the suitability of a donor, an establishment must apply a plasma dilution algorithm if a donor pre-transfusion or pre-infusion blood sample is unavailable.

Blood transfusion or infusion of intravenous fluid could dilute the donor’s blood and lead to a decrease in concentration of circulating antigens and antibodies. This could lead to false negative results for infectious disease tests. To ensure the samples tested are reliable, testing must be performed on a pre-transfusion/infusion blood sample that is collected as close to the time of retrieval as possible. It is recommended that testing be done on the most recent pre-transfusion/infusion specimen for which identity and quality can be ensured.

If no pre-transfusion/infusion blood sample is available, benchmarks for hemodilution shall be applied.

A donor is ineligible to donate if there is no pre-transfusion/infusion blood sample, and the post-transfusion/infusion blood sample is diluted by more than 50%. The donor must also be rejected if there is any doubt regarding the maximum volume of fluid transfused/infused.

Establishments must have SOPs that describe situations that could result in plasma dilution, as well as the collection of pre-transfusion/infusion samples.

Additional exclusion criteria — tissue donors

20. In assessing the suitability of a tissue donor, except an ocular tissue donor, an establishment must perform both of the following steps:

(a) determine that the donor is not unsuitable to donate on the basis of the contraindications or exclusion criteria set out in section 13.1.2 of the tissue standard; and

(b) perform appropriate and effective tests for the diseases or disease agents specified in section 14.2.6 of the tissue standard.

Exclusionary Criteria
In addition to the exclusion criteria of section 13.1.3 of the general standard, donors shall be excluded from donating tissues on the basis of the exclusionary criteria in section 13.1.2 of the tissue standard.

Tests that are considered appropriate and effective
Mandatory Testing
In addition to the disease or disease agents specified in section 14.2.6 of the general standard, Health Canada considers the following infectious diseases markers to be appropriate and effective for testing tissue donors in order to comply with section 14.2.6 of the tissue standard:

a) antibodies to human T-lymphotropic virus type I and type II (anti-HTLV-I and HTLV-II) for donors of viable, leukocyte-rich tissue; and

b) syphilis, using a non-treponemal or a treponemal-specific assay.

Tissues that are not considered leukocyte-rich include, among others, bone, cartilage, corneas, ligaments, sclera, skin, and tendons.

**Recommended Testing**
Health Canada recommends that donors of tissues not considered leukocyte-rich be tested for HTLV-I and HTLV-II.

### Additional exclusion criteria — ocular tissue donors

**21.** In assessing the suitability of an ocular tissue donor, an establishment must determine that the donor is not unsuitable to donate on the basis of the contraindications or exclusion criteria set out in sections 13.1.3 to 13.1.6 of the ocular standard.

### Exclusionary Criteria
In addition to the exclusion criteria of section 13.1.3 of the general standard, donors shall be excluded from donating ocular tissue on the basis of the exclusionary criteria in sections 13.1.3 to sections 13.1.6 of the ocular standard.

Under these Regulations, active leukemia and disseminated lymphomas are considered contraindications to ocular tissue donation (section 13.1.3 (o) and (p) of the ocular standard). A donor that is free from the presence of these diseases can be eligible to donate.

**Eligibility based on HTLV and syphilis testing**
Although anti-HTLV-I, anti-HTLV-II, and syphilis testing are not required for ocular tissue donors, ocular tissues shall not be considered eligible for transplantation if the donor is tested and found positive for these disease agents or markers during a workup for the donation of organs or other tissues (section 14.2.1.2 of the ocular tissue standard).
Additional requirements — organ and islet cell donors

22. (1) In assessing the suitability of an organ or islet cell donor, an establishment must perform all of the following steps:
   (a) obtain the donor information and history in accordance with sections 12.2.2.3, 12.2.2.4, 12.2.3.4 and 12.2.3.7 of the organ standard;
   (b) determine that the donor is not unsuitable to donate on the basis of the contraindications or exclusion criteria set out in section 13.2.2 of the organ standard;
   (c) perform the tests specified in sections 14.1.2 and 14.3.2 of the organ standard; and
   (d) perform appropriate and effective tests for the diseases or disease agents specified in sections 14.2.6.3 and 14.2.6.6 of the organ standard.

Exception — imported organs

(2) Despite subsection (1), in the case of an imported organ, the transplant establishment need only have the following:
   (a) documentation of the donor suitability assessment according to the requirements of the jurisdiction where the assessment was performed;
   (b) documentation that the tests specified in sections 14.1.2 and 14.3.2 of the organ standard have been performed;
   (c) documentation that appropriate and effective tests for the diseases or disease agents specified in sections 14.2.6.3 and 14.2.6.6 of the organ standard have been performed; and
   (d) in the case of those of the tests for the diseases or disease agents specified in section 14.2.6.3 of the organ standard that must be performed before transplantation and the blood group test for ABO, a copy of the test results.

Donor information and history
Section 12.2.2.3 of the organ standard requires that the previous residence or travel history be documented for all donors. The reason behind this requirement is that certain geographic regions are considered by Health Canada and the US Centers for Disease Control and Prevention to be endemic for certain transmissible diseases. For this reason, a donor’s history with respect to travel and residency could place them at higher risk for certain transmissible diseases.

Exclusionary Criteria
In addition to the exclusion criteria of section 13.1.3 of the general standard, donors shall be excluded from donating organs and islet cells on the basis of the exclusionary criteria in section 13.2.2 of the organ standard.
Tests that are considered appropriate and effective

Mandatory testing

In addition to the disease or disease agents specified in section 14.2.6 of the general standard, Health Canada considers the following infectious diseases markers to be appropriate and effective for testing organ and islet cells donors in order to comply with section 14.2.6.3 and section 14.2.6.6 of the organ standard:

a) antibodies to human T-lymphotropic virus type I and type II (anti-HTLV-I and HTLV-II);

b) toxoplasmosis for heart donors, which may be performed retrospectively by testing for antibody to toxoplasmosis in the donor’s serum using a medically acceptable test (e.g., enzyme-linked immunoassay);

c) syphilis, using a non-treponemal or treponemal-specific assay, in cases where the organs are not stored in a culture media at 4°C for more than 24 h.

Recommended testing

Testing of the following infectious disease markers are recommended for organ and islet cell donors (section 14.2.6.4 of the organ standard);

a) total antibody to cytomegalovirus (anti-CMV, IgG and IgM)

b) Epstein-Barr virus [antibody to EBV (anti-EBV), antibody to EBV nuclear antigen (anti-EBNA, IgG), or anti-viral capsid antigen (anti-VCA, IgG)], particularly for potential recipients who are negative for EBV.

c) nucleic acid for WNV.
23. (1) In assessing the suitability of a donor of lymphohematopoietic cells, an establishment must perform all of the following steps:
   
   (a) obtain the donor information and history in accordance with sections 12.2.2.2 and 12.2.2.3 of the lymphohematopoietic standard;
   
   (b) perform a physical examination of the donor in accordance with section 13.2 of the lymphohematopoietic standard;
   
   (c) determine that the donor is not unsuitable to donate on the basis of the contraindications or exclusion criteria set out in section 13.1.3 of the lymphohematopoietic standard;
   
   (d) perform the tests specified in section 12.2.2.4 of the lymphohematopoietic standard; and
   
   (e) perform appropriate and effective tests for the diseases or disease agents specified in section 14.2.3 of the lymphohematopoietic standard.

**Exception — imported lymphohematopoietic cells**

(2) Despite subsection (1), in the case of imported lymphohematopoietic cells, the source establishment must

   (a) have documentation of the donor suitability assessment;
   
   (b) perform the tests specified in section 12.2.2.4 of the lymphohematopoietic standard;
   
   (c) perform appropriate and effective tests for the diseases or disease agents specified in section 14.2.3 of the lymphohematopoietic standard; and
   
   (d) determine that the donor is not unsuitable to donate on the basis of the exclusion criteria set out in section 13.1.3.4 of the lymphohematopoietic standard.

In the case of cord blood, the infant is considered the donor. Any testing that is to be done on the birth mother is referred to as surrogate testing.

2.6.2 **Donor Suitability Assessment**

Donor suitability assessment (section 12.2 of the lymphohematopoietic standard), which is intended to elicit risk factors, is generally based on a medical and social history, clinical status, physical examination and tests. Documentation of this assessment must include all the elements specified in section 12.2.2.3 of the lymphohematopoietic standard, and should also include all the elements in section 12.3 of the general standards, as specified in section 12.3 of the lymphohematopoietic standard.
2.6.2.1 Donor Screening
Donor screening is one component of donor suitability assessment and is intended to elicit
general health information and identify risk factors (e.g., infectious disease risks) that could
potentially impact the safety of the lymphohematopoietic cells. This risk assessment is based on
the donor’s medical and social history, clinical status, physical examination and tests. The
information regarding the donor’s medical and social history and clinical status can be obtained
through a donor interview and a review of the donor’s medical records or charts. The interview
should be conducted using a medical/sexual/social history questionnaire which includes the
applicable contraindications/exclusion criteria and other relevant questions, and should be
documented in the form of a checklist where the response/outcome for each criterion is recorded.
If the donor is unable to participate in the interview, the interview may be carried out with one or
more individuals who can provide the necessary information, such as the donor’s next of kin or
nearest available relative, an individual with a relationship with the donor (e.g., caretaker, friend,
partner), a member of the donor’s household, or the donor’s primary physician. The interview
may take place in person or by telephone.

An establishment must develop and maintain SOPs for all steps performed during donor
screening, including those governing the conduct of the donor medical/sexual/social history
interview and the administration of a donor screening questionnaire(s). If a questionnaire
developed by a professional organization is to be used, an establishment must review the
questionnaire to determine if it meets all the requirements of the CTO Regulations for donor
screening.

2.6.2.2 Contraindications/Exclusion Criteria
The conditions and behaviours set out in section 13.1.3 of the lymphohematopoietic standard and
Annex E of the general standard may increase the risk that a donor may have and/or could
potentially transmit an infectious disease to the recipient. For this reason, donors shall be
excluded from donating lymphohematopoietic cells on the basis of these
contraindications/exclusion criteria, except in cases where exceptional distribution is used (see
sections 40 to 42 of the CTO Regulations for more information).

First degree relative in the context of section 13.1.3.1 of the lymphohematopoietic standard
refers to a sibling, a parent or a child of the recipient. Anybody that is not a first degree relative
must comply with the requirements of section 13.1.3.3 of the lymphohematopoietic standard.

Examples of neurological diseases of unestablished etiology that are as listed as exclusion
criteria in section 13.1.3 of the lymphohematopoietic standard include, but are not limited to,
multiple sclerosis Alzheimer's, Parkinson's and amyotrophic lateral sclerosis or Lou Gehrig's
disease.
Examples of prion related disease as that are described as exclusion criteria in section 13.1.3 of the lymphohematopoietic standard include, but are not limited to, Creutzfeldt-Jakob disease, variant Creutzfeldt-Jakob disease, and other transmissible spongiform encephalopathies.

Viruses associated with meningitis, which is listed as an exclusionary criteria in section 13.1.3 in the lymphohematopoietic standard include, but are not limited to, enteroviruses, Mumps Virus, Herpes Simplex Virus, WNV, Varicella Zoster Virus.

The contraindications to lymphohematopoietic cell donation stated in section 13.1.3.3 of the lymphohematopoietic standard include the exclusionary criteria for risk factors associated with HIV, HBV and HCV, which constitutes Annex E of the general standard.

2.6.2.3 Physical Examination
Prior to the donation of lymphohematopoietic cells from a potential donor, a physical examination must be performed by the medical director or his/her designate, or by a physician or his/her designate, that is involved with the donor’s medical care.

In the case of cord blood, a surrogate physical examination must be performed. If a physical examination was previously performed in the course of the birth mother’s pregnancy, a review of the findings of such an examination can be performed and documented in the donor’s records in lieu of a new physical examination.

An establishment must have SOPs describing the conduct of the physical examination of a donor.

2.6.2.4 Donor Testing

General Requirements
Donor testing includes laboratory tests for transmissible disease agents (e.g., HIV, HBV and HCV); tests performed to determine the donor’s blood type (i.e., ABO group and Rh type) and HLA type; or any procedures done to evaluate or provide information on the lymphohematopoietic cells. The guidance provided below for donor testing focuses on laboratory tests for the various transmissible disease agents applicable to lymphohematopoietic cell donors.

Time Frame for Specimen Collection
Infectious disease tests must be performed using blood specimens taken at the time of, or within 7 days following the collection of cord blood donation, and within 30 days prior to the collection of all other donations, i.e., lymphohematopoietic cells derived from bone marrow and peripheral blood (subsection 12.2.2.4 (c) of the lymphohematopoietic standard). The collection of specimens within 30 days prior to the donation allows the determination of donor eligibility within the time frame required for the recipient to initiate myeloablative chemotherapy.
event that collections from the same donor are performed more than 30 days apart, the donor shall be retested for the infectious disease markers, unless a previously positive test results has been documented.

Establishments must have SOPs that specify the time frames for the collection of blood specimens from donors of each type of lymphohematopoietic cells.

**Infectious Disease Testing**

All source establishments must ensure that infectious disease testing is performed in accordance with the following:

1) Testing shall be performed by a laboratory that meets applicable laws and regulations of the authority having jurisdiction over that laboratory.
2) The tests must be performed using test kits that are licensed as required in sections 25 and 26 of the CTO Regulations.
3) The testing laboratories must follow the test kit manufacturer’s instructions with respect to the following:
   a) the collection, handling, and storage of blood specimen;
   b) the time frame within which samples must be tested, if applicable;
   c) the procedure for testing and
   d) the interpretation of the test results.
4) Establishments must have SOPs for the conduct of infectious disease tests that conform with the manufacturer’s instructions. In cases where testing is performed by a contract laboratory or another establishment, the source establishment must ensure that the SOPs of the testing laboratory conform with the test kit manufacturer’s instructions.

**Interpretation of Infectious Disease Test Results**

Donor eligibility determination shall include the interpretation of the infectious disease test results as outlined below:

1) For HIV-1 and 2, HBV, HCV and HTLV-I and II, the lymphohematopoietic cells shall not be released for transplantation if the donor’s specimen is repeatedly reactive or positive for any of the markers of these infectious disease agents [note: repeatedly reactive means a single blood sample from the donor is reactive on initial testing (i.e., initially reactive), and either one or both samples are reactive when the same test (i.e., using the same test kit from the same manufacturer but not necessarily the same lot) is repeated in duplicate on the same blood sample]. In cases where additional tests are performed to confirm or supplement the repeat reactive test results (e.g., for the purpose of donor or next-of-kin notification), the lymphohematopoietic cells shall not be released for transplantation even if the confirmatory or supplemental test results are negative or non-reactive.
2) For syphilis, the lymphohematopoietic cells may be released for transplantation if the donor’s blood sample is reactive for a nontreponemal test, but negative or nonreactive for a treponemal-specific confirmatory assay. If only the treponemal-specific assay for
syphilis is performed, the lymphohematopoietic cells shall not be released for transplantation if the donor’s specimen is reactive or positive.

3) If an establishment performs additional tests that are not mandatory (e.g., NAT for HIV-1, HCV and WNV, or obtains such test results for a shared donor from another establishment, the results must be taken into consideration when determining donor eligibility if they are available prior to the release of the lymphohematopoietic cells. It should be noted that, in uncommon circumstances, exceptional distribution may be used if the donor specimen is repeatedly reactive or positive for the markers of infectious disease agents. More information on exceptional distribution can be found in sections 40 to 42 of the CTO Regulations.

Results of all tests, including those that are optional, must be included in the donor records. Establishments must have SOPs for the interpretation and handling of all test results, including the communication of test results to transplant physicians or to establishments to which the lymphohematopoietic cells are distributed. Procedures must also be established for handling the results of optional tests that become available after the lymphohematopoietic cells have been released for distribution, and must include notification of transplant physicians or establishments to which the lymphohematopoietic cells are distributed.

Archived Samples
The CTO Regulations do not require the collection of samples for archiving as this has no impact on the safety of lymphohematopoietic cells that meet current regulatory requirements. It is recommended that cell, tissue, plasma or serum samples from each donor be archived for retrospective testing of donors of lymphohematopoietic cells that are still in inventory when new tests are adopted for screening donors for existing or emerging pathogens. The requirement for such retrospective testing will be based on the degree of safety enhancement afforded by the new tests, and the availability of tests that are appropriately validated or approved under the MDR for testing frozen specimens. If such retrospective testing is required, Health Canada will inform CTO establishments.

If an establishments chooses to archive samples, they must have SOPs for the collection and storage of samples for archiving. Samples must be stored frozen, and should be kept for at least 5 years. Establishments must also have documentation to show that the samples are maintained at the appropriate temperature throughout the storage period.

Establishments may not be able to use and/or distribute cells that are available in their existing inventory when new tests are introduced and they are unable to perform retrospective testing using archived donor samples that have been stored appropriately.
Tests that are considered appropriate and effective

Mandatory Testing
All donors of lymphohematopoietic cells must be tested and found negative or non-reactive for the infectious disease agents listed in section 14.2.3 of the lymphohematopoietic standards, using appropriate and effective tests. A test is considered appropriate and effective if (i) it is licensed for the detection of the infectious disease agent or marker in accordance with the licensing requirements specified in sections 25 and 26 of the CTO Regulations; (ii) it is used in accordance with the test kit manufacturers instructions; and (iii) it is used for the detection of an infectious disease marker that is relevant at the time testing is performed. A list of such appropriate infectious disease markers is provided below. This list may be revised when new infectious disease tests become licensed, or when new information necessitates an amendment.

Health Canada considers the following infectious diseases markers to be appropriate and effective for testing lymphohematopoietic cell donors in order to comply with section 14.2.3 of the lymphohematopoietic standard:

- a) antibodies to the human immunodeficiency virus, types 1 and type 2 (anti-HIV-1 and anti-HIV-2);
- b) hepatitis B surface antigen (HBsAg);
- c) total antibody to hepatitis B core antigen (anti-HBc, IgG and IgM);
- d) antibodies to hepatitis C virus (anti-HCV);
- e) antibodies to human T-lymphotropic virus type I and type II (anti-HTLV-I and anti-HTLV-II);
- f) total antibody to cytomegalovirus (anti-CMV, IgG and IgM); and
- g) syphilis, using a non-treponemal or treponemal-specific assay

In the case of infant donors, the birth mother must be tested for infectious disease agents, in order to address vertical transmission of infectious agents from the birth mother to a donor who is less than 18 months old, or who has donated within 12 months beyond breast-feeding (section 14.2.6.2 of the general standard).

The establishments must have SOPs that describe which infectious disease tests must be performed and when testing of the birth mother is required for infant donors.

The minimum donor testing requirements stated in section 12.2.2.4 of the lymphohematopoietic standard have to be met before transplantation.

Recommended Testing
Donors should also be tested for HIV-1 and HCV using NAT, if available. In particular, NAT should be performed in circumstances where it is clinically indicated, for example, if a decision is made to use exceptional distribution for lymphohematopoietic cells from a donor with a history of high risk behaviour and a negative serological test for HIV and HCV.
The mother of an infant donor who is more than one month old need not be tested for infectious disease agents, if testing of the infant donor includes the serological tests listed above as well as the NAT for HIV-1 and HCV. With the exception of cord blood, infant donors should also be tested for infectious disease agents.

Lymphohematopoietic cell donors should be tested for WNV using a test kit that has been licensed for the detection of viral nucleic acid. Testing could be performed on a seasonal basis if specific procedures are in place to determine the time frames for seasonal testing and to determine other circumstances when testing for WNV may be required outside of these time frames, ie. when a donor has travelled to a “high risk” area.

A test kit has been licensed by Health Canada for the detection of WNV ribonucleic acid in plasma specimens from both living and deceased donors.

The Medical Device Bureau of the Therapeutic Products Directorate is the Canadian federal regulator responsible for licensing in accordance with the F&DR and the MDR. Medical Devices Active Licences Listing (MDALL), (http://www.hc-sc.gc.ca/dhp-mps/md-im/licen/mdlic-eng.php) a database containing all licensed Class II, Class III and Class IV Medical Devices for sale in Canada, can be found on the Health Canada Web site. At the device prompt in the Medical Devices Active Licences Listing (MDALL), “donor screening” can be entered to access a list of licensed test kits approved for donor screening.

The maximum interval between the cardiac asystole of the donor and the retrieval of the tissue is considered scientifically based if it meets one or more of the following criteria:

- a) the maximum interval between the cardiac asystole of the donor and the retrieval of the tissue has been established in standards developed by recognized professional organizations, based on established practice;
- b) data is available in the scientific literature to support the maximum interval between the cardiac asystole of the donor and the retrieval of the tissue;
- c) the maximum interval between the cardiac asystole of the donor and the retrieval of the tissue has been validated by the establishment.

Retrieval interval — tissues

24. An establishment that retrieves tissue from a deceased donor must carry out the retrieval within the scientifically based maximum interval between the cardiac asystole of the donor and the retrieval of the tissue.
Licensed diagnostic devices

25. (1) Subject to subsection (2), in vitro diagnostic devices that are used by an establishment in the testing of donor blood for transmissible disease agents or markers under these Regulations must be licensed either
   (a) in Canada, if the testing is performed in Canada; or
   (b) in Canada or the United States, if the testing is performed outside Canada.

Exception — lymphohematopoietic cells

(2) In the case of lymphohematopoietic cells that are imported into Canada for transplantation into a specific recipient, the in vitro diagnostic devices may be licensed in Canada or any other jurisdiction.

Under subsection 25(1) of the CTO Regulations, the in vitro diagnostic devices that are used by an establishment to test donors of CTO for transmissible diseases or disease agents must be licensed in Canada, if the testing is carried out in Canada. If the testing is performed outside of Canada, the in vitro diagnostic devices must be licensed either in Canada or the United States. An exception is made in subsection 25(2) for lymphohematopoietic cells that are imported into Canada for transplantation into a specific recipient, where the in vitro diagnostic devices used in donor testing may be licensed in Canada or any other jurisdiction.

The Medical Device Bureau of Health Canada’s Therapeutic Products Directorate is the Canadian federal regulator responsible for licensing in accordance with the F&DR and the MDR. Medical Devices Active Licences Listing (MDALL), (http://www.hc-sc.gc.ca/dhp-mps/md-im/licen/mdlic-eng.php) a database containing all licensed Class II, Class III and Class IV Medical Devices for sale in Canada, can be found on the Health Canada Web site.

In vitro diagnostic devices — cells and tissues

26. (1) In the case of cells and tissues, in vitro diagnostic devices that are used by an establishment in the testing of donor blood for transmissible disease agents or markers under these Regulations must be licensed for screening donors.

Exception — syphilis

(2) Despite subsection (1), in vitro diagnostic devices that are used in the testing of donor blood for syphilis may be licensed either for diagnosis or screening donors.

Donor screening test kits are licensed based on investigational testing in a population with a low disease prevalence (e.g., healthy blood donors), with an emphasis on test sensitivity. In contrast, investigational testing of test kits that are licensed for diagnosis is performed in a symptomatic
population, with an emphasis on test specificity. Thus, test kits that are licensed for donor screening are considered more appropriate for screening CTO donors.

In the case of tissues and cells, with the exception of islet cells, the diagnostic devices that are used by an establishment must be licensed for screening donors. Infectious disease test kits that are used in the case of organ donors may be licensed for either screening donors or for diagnosis, as the time frames of organ transplantation doesn't always permit the use of screening tests. The CTO Regulations also provide for the use of test kits licensed for diagnosis in the case of syphilis testing, as test kits that are licensed for donor screening are not yet available or easily accessible.

Infectious disease tests are also licensed for different types of specimens, and the test kit manufacturers provide instructions for the use of each test kit in the package insert. In the context of CTO donations, a test may be licensed for testing blood specimens obtained from live donors (i.e., the blood specimen is obtained while the donor’s heart is still beating), or from cadaveric donors (i.e., the blood specimen is obtained after the donor’s heart stops beating). For specimens obtained after the donor’s heart stops beating, establishments should use a test that is specifically licensed for cadaveric specimens, if such tests are available in the jurisdiction where the test is being performed.

The source establishment must ensure that laboratories performing bacteriological testing meet the requirements of the authorities having jurisdiction. These laboratories must use bacteriological tests that are licensed for the specimen being tested. Where licensed tests are not available, testing must be performed according to procedures that have been validated for the intended use.

Quality control (QC) testing must be performed for any transport medium prepared in-house to ensure it maintains the viability of both aerobic and anaerobic organisms. Similarly, growth media prepared in-house must be subject to QC testing to ensure its sterility as well as its ability to support the growth of aerobic and anaerobic organisms.
2.7  Packaging and Labelling (Sections 28 to 33 of the CTO Regulations)

Packaging materials

28. An establishment that packages cells, tissues or organs must ensure that it uses appropriate packaging materials that are free from damage and capable of maintaining the integrity of the cells, tissues and organs.

An establishment must have documented evidence that the packaging materials used are capable of maintaining the integrity of the CTO. The documented evidence must be available upon request. The packaging materials must also be compatible with the CTO in order to prevent any interactions which may cause the package to degrade or chemicals from the packaging to be absorbed by the CTO. Only packaging materials assessed and released by Quality Assurance (QA) personnel or by a designated alternate should be used in the packaging of CTO. Materials that are outdated or rejected should be adequately segregated until their disposal, which should be recorded. All packaging materials must be visually examined for damage before being used.

Upon receipt, all packaging materials should be examined and/or tested as required against the specifications described on the certificate of analysis, the packaging documents or the manufacturer’s instructions, as appropriate.

Language requirement

29. All of the information that is required by these Regulations to appear on a label or package insert must be in either English or French.

Cells, except islet cells

30. (1) An establishment that distributes cells, except islet cells, must ensure that all of the applicable information, as indicated by an “X”, set out in the table to this subsection is provided on the interior label, in the package insert and on the exterior label.

Pancreas and islet cells

(2) An establishment that distributes a pancreas for islet cell transplantation, or islet cells, must ensure that all of the applicable information, as indicated by an “X”, set out in the table to this subsection is provided on the interior label, in the package insert and on the exterior label.
<table>
<thead>
<tr>
<th>Item</th>
<th>Required information</th>
<th>Column 1 (From retrieval establishment to transplant establishment)</th>
<th>Column 2 (From retrieval establishment to cell bank)</th>
<th>Column 3 (From cell bank to any other establishment)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Interior label</td>
<td>Package insert</td>
<td>Exterior label</td>
</tr>
<tr>
<td>1.</td>
<td>Name of cell</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2.</td>
<td>Description of cell</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3.</td>
<td>Donor identification code, clearly labelled as such</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4.</td>
<td>Information capable of identifying the donor</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>5.</td>
<td>Donor assessment record</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>6.</td>
<td>ABO group and Rh factor of donor, if applicable</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7.</td>
<td>The hazard symbol entitled “Biohazardous Infectious Material” set out in Schedule II to the Controlled Products Regulations, if applicable</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>8.</td>
<td>Date, time and time zone of retrieval</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>9.</td>
<td>Information specific to retrieval procedure</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>10.</td>
<td>Name of anticoagulant and other additive, if applicable</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>11.</td>
<td>Statement “For Autologous Use Only”, if applicable</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>12.</td>
<td>Statement that the cell has been declared safe for transplantation</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>13.</td>
<td>Statement “For Exceptional Distribution”, if applicable</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>14.</td>
<td>If applicable, the reasons for exceptional distribution and a statement of how the cell does not meet the requirements of these Regulations</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Item</td>
<td>Required information</td>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
</tr>
<tr>
<td>------</td>
<td>----------------------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>From retrieval establishment to transplant establishment</td>
<td>From retrieval establishment to cell bank</td>
<td>From cell bank to any other establishment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interior label</td>
<td>Package insert</td>
<td>Exterior label</td>
</tr>
</tbody>
</table>

15. Instructions on how to report errors, accidents and adverse reactions

16. Expiry date and time, if applicable

**Establishment information**

17. Name of retrieval establishment, its civic address and contact information

18. Name of source establishment, its civic address and contact information

19. Registration number of source establishment, clearly labelled as such

20. Name of transplant establishment, if known, its civic address and contact information

**Storage information**

21. Statement “Human cells for transplant”

22. Handling instructions for storage and for storage during transportation

---

**TABLE TO SUBSECTION 30(2)**

**LABELLING REQUIREMENTS FOR PANCREAS AND ISLET CELLS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Required information</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>From retrieval establishment to source establishment</td>
<td>From source establishment to any other establishment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interior label</td>
<td>Package insert</td>
<td>Exterior label</td>
</tr>
</tbody>
</table>

**Information about donor and organ or islet cells**

1. Name of organ or cells, as applicable

2. Description of organ or cells, as applicable

3. Donor identification code, clearly labelled as such

4. Information capable of identifying the donor

5. Donor assessment record

6. ABO group and Rh factor of donor, if applicable

7. The hazard symbol entitled “Biohazardous Infectious Material” set out in Schedule II to the Controlled Products Regulations, if applicable
## Item | Required information | Column 2 | Column 3
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Interior label</td>
<td>Package insert</td>
</tr>
<tr>
<td>8.</td>
<td>Date, time and time zone of asystole or aortic clamping, if applicable</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Date, time and time zone of retrieval</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Information specific to retrieval procedure</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Name of perfusion solution</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Retrieval information</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Name of storage solution</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Name of additives, if applicable</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Processing information</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Statement that the cells have been declared safe for transplantation</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Statement “For Exceptional Distribution”, if applicable</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>16.</td>
<td>If applicable, the reasons for exceptional distribution and a statement of how the organ or cells do not meet the requirements of these Regulations</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Instructions on how to report errors, accidents and adverse reactions</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Expiry date and time, if applicable</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Information for establishments</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Name of retrieval establishment, its civic address and contact information</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>20.</td>
<td>Name of source establishment, its civic address and contact information</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>21.</td>
<td>Registration number of source establishment, clearly labelled as such</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>22.</td>
<td>Name of other establishment, its civic address and contact information</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Storage information</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Statement “Human organ for transplant” or “Human cells for transplant”, as applicable</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>24.</td>
<td>Handling instructions for storage and for storage during transportation</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

### Information capable of identifying the donor

This kind of information refers to any information that allows the hospital to identify the donor. It includes, but is not limited to, the donor's name, date of birth, hospital identification number and health care number.

### Biohazardous Infectious Materials

The symbol that is to be used for biohazardous infectious materials is the following:
This symbol must appear on the interior and exterior labels of CTO that have tested positive for infectious diseases markers that would lead to the exclusion of a donor.

If a generic CTO package insert is prepared, all information specific to a CTO could be printed on a label that will accompany the CTO “standard” package insert.

### TABLE TO SECTION 31
**LABELLING REQUIREMENTS FOR TISSUE**

<table>
<thead>
<tr>
<th>Item</th>
<th>Required information</th>
<th>Column 2 From retrieval establishment to tissue bank</th>
<th>Column 3 From tissue bank to any other establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Interior label</td>
<td>Package insert</td>
</tr>
<tr>
<td><strong>Information about donor and tissue</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Name of tissue, and whether left or right side, if applicable</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2.</td>
<td>Description of tissue</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>3.</td>
<td>Donor identification code, clearly labelled as such</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Information capable of identifying the donor</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Donor assessment record</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>The hazard symbol entitled &quot;Biohazardous Infectious Material&quot; set out in Schedule II to the Controlled Products Regulations, if applicable</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Retrieval information</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Date, time and time zone of asystole or aortic clamping, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Date, time and time zone of retrieval</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Information specific to retrieval procedure</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Processing information</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Name of storage solution, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Name of anticoagulant and other additive, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Statement that the tissue has been irradiated, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Description of the disinfection and sterilization processes that were used, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Statement &quot;For Autologous Use Only&quot;, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Information for transplant establishment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Tissue-specific instructions for preparation for use, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Statement that the tissue has been declared safe for transplantation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Statement &quot;For Exceptional Distribution&quot;, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Required information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>----------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>If applicable, the reasons for exceptional distribution and a statement of how the tissue does not meet the requirements of these Regulations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Instructions on how to report errors, accidents and adverse reactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Expiry date and time, if applicable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Establishment information**

<table>
<thead>
<tr>
<th>Item</th>
<th>Required information</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>Name of retrieval establishment, its civic address and contact information</td>
</tr>
<tr>
<td>22.</td>
<td>Name of source establishment, its civic address and contact information</td>
</tr>
<tr>
<td>23.</td>
<td>Registration number of source establishment, clearly labelled as such</td>
</tr>
<tr>
<td>24.</td>
<td>Name of transplant establishment, if known, its civic address and contact information</td>
</tr>
</tbody>
</table>

**Storage information**

<table>
<thead>
<tr>
<th>Item</th>
<th>Required information</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.</td>
<td>Statement &quot;Human tissue for transplant&quot;</td>
</tr>
<tr>
<td>26.</td>
<td>Handling instructions for storage and for storage during transportation</td>
</tr>
</tbody>
</table>

Information capable of identifying the donor

This kind of information refers to any information that allows the hospital to identify the donor. It includes, but is not limited to, the donor's name, date of birth, hospital identification number and health care number.

**Biohazardous Infectious Materials**

The symbol that is to be used for biohazardous infectious materials is the following:

![Biohazard symbol]

This symbol must appear on the interior and exterior labels of CTO that have tested positive for infectious diseases that would lead to the exclusion of a donor.

If a generic CTO package insert is prepared, all information specific to a CTO could be printed on a label that will accompany the CTO “standard” package insert.

**Organs**

**32.** An establishment that distributes organs must ensure that all of the applicable information, as indicated by an “X”, set out in the table to this section is provided on the interior label, in the package insert and on the exterior label.

**TABLE TO SECTION 32**
## LABELLING REQUIREMENTS FOR ORGANS

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>Required information</td>
<td>DECEASED DONOR: From retrieval establishment to transplant establishment</td>
</tr>
<tr>
<td></td>
<td>Interior label</td>
<td>Package insert</td>
</tr>
</tbody>
</table>

### Information about donor and organ

1. Name of organ, and whether left or right side, if applicable
   - Column 1: X
   - Column 2: X
   - Column 3: X
2. Description of organ
   - Column 1: X
3. Donor identification code, clearly labelled as such
   - Column 1: X
4. All information in the donor assessment record that is not capable of identifying the donor
   - Column 1: X
5. ABO group and Rh factor of donor
   - Column 1: X
   - Column 2: X
6. The hazard symbol entitled "Biohazardous Infectious Material" set out in Schedule II to the Controlled Products Regulations, if applicable
   - Column 1: X
   - Column 2: X
   - Column 3: X

### Retrieval information

7. Date, time and time zone of asystole or aortic clamping, if applicable
   - Column 1: X
8. Date, time and time zone of retrieval
   - Column 1: X
9. Information specific to retrieval procedure
   - Column 1: X
10. Name of perfusion solution
    - Column 1: X

### Processing information

11. Name of storage solution
    - Column 1: X

### Information for transplant establishment

12. Statement that the organ has been declared safe for transplantation
    - Column 1: X
13. Statement "For Exceptional Distribution", if applicable
    - Column 1: X
14. If applicable, the reasons for exceptional distribution and a statement of how the organ does not meet the requirements of these Regulations
    - Column 1: X
15. Instructions on how to report errors, accidents and adverse reactions
    - Column 1: X

### Establishment information

16. Name of retrieval establishment, its civic address and contact information
    - Column 1: X
17. Name of source establishment, its civic address and contact information
    - Column 1: X
18. Registration number of source establishment, clearly labelled as such
    - Column 1: X
19. Name of transplant establishment, its civic address and contact information
    - Column 1: X

### Storage information

20. Statement "Human organ for transplant"
    - Column 1: X
21. Handling instructions for storage and for storage during transportation
    - Column 1: X

---

### All information in the donor assessment record that is not capable of identifying the donor

This kind of information refers to any information that allows the hospital to identify the donor. It includes, but is not limited to, the donor's date of birth, hospital identification number and health care number.

---

*Date adopted: 04/06/2009*
Biohazardous Infectious Materials
The symbol that is to be used for biohazardous infectious materials is the following:

This symbol must appear on the interior and exterior labels of CTO that have tested positive for infectious diseases that would lead to the exclusion of a donor.

If a generic CTO package insert is prepared, all information specific to a CTO could be printed on a label that will accompany the CTO “standard” package insert.

In cases where no packaging is used, for examples during simultaneous transplants, the information that must appear on the interior label, the package insert and on the exterior label must be recorded elsewhere. This could be achieved by recording the information in the recipient chart.

Additional information required

33. A registered establishment that imports and distributes, or that only distributes, a cell or tissue must ensure that the following information is added to that required by sections 30 and 31:
   (a) on the exterior label and in the package insert, the name of the establishment, its civic address and contact information; and
   (b) on the exterior label and in the package insert, the establishment’s registration number.
2.8 Quarantine (Section 34 of the CTO Regulations)

Quarantine refers to segregating cells and tissues that have not met the screening and testing requirements of the CTO Regulations from those that have, and preventing them from being used in transplantation or distribution. In addition, cells and tissues that are implicated in any error, accident or adverse reaction investigation must also be quarantined until the results of the investigation have determined that the cells and tissues are safe for transplantation.

In cases where tissues donated by living donors is going to be stored, the tissues must be held in quarantine for at least 180 days, at which time the donors shall be retested for the following infectious disease markers before the tissues is released (Section 17.2.2 of the tissue standard):

- i) anti-HIV-1 and anti-HIV-2;
- ii) anti-HBc, IgG and IgM
- iii) antibodies to hepatitis C virus (anti-HCV)
- iv) anti-HTLV-I and anti-HTLV-II for viable, leukocyte-rich tissues

Tissue that is not considered leukocyte-rich include, among others, bone, cartilage, corneas, ligaments, sclera, skin, and tendons.

In the case of fetal or infant donors, surrogate testing may be required after the donated tissues have been quarantined for at least 180 days (section 17.2.4 of the tissue standard). This means that testing will be performed using a specimen obtained from the birth mother instead of the fetal or infant donor. Since surrogate testing is intended to addresses vertical transmission of infectious agents from the birth mother to a donor who is less than 18 months, or who donated tissues within the 12 months beyond breast-feeding (section 14.2.6.2 of the general standard), the need for surrogate testing will be determined by the age of the donor at the time of donation. For example, if a donor is 2 months at the time of donation, surrogate testing will be required after
the 180-day quarantine period because the donor will still be less than 18 months. However, if the donor is 14 months at the time of donation, surrogate testing will not be required after the 180-day quarantine period because the donor will no longer be less than 18 months.

Establishments must have SOPs that outline how to determine whether testing must be performed with blood samples from the birth mother or the fetal/infant donor.

If the initial testing performed on the living donor blood specimen included NAT for HIV-1 and HCV, 180 day quarantine and testing of a repeat blood sample is not required (section 17.2.3 of the tissue standard).

2.9 Storage (Sections 35 to 39 of the CTO Regulations)

A maximum storage period must be determined for each CTO to ensure their integrity, function and sterility are maintained throughout their shelf life. Factors that should be considered when establishing the expiration date for each CTO include the following, as applicable:

- method of preservation (e.g., cryopreservation, lyophilization or dehydration);
- storage conditions (e.g., room temperature, refrigeration, freezing);
- packaging (e.g., ability to maintain sterility and moisture content).

The maximum storage period is considered scientifically based if it meets one or more of the following criteria:

- the storage period for specific storage conditions has been established in standards developed by recognized professional organizations, based on established practice;
- data is available in the scientific literature to support the storage period for the specific storage conditions;
- the storage period for the specific storage conditions has been validated by the establishment.

Establishments should provide instructions on corrective actions to be taken when temperatures fall outside the acceptable temperature limits.
All CTO must be stored under defined and controlled environmental conditions. The appropriate environmental conditions for storing CTO must be defined in an SOP. Documentation that the CTO were maintained under the appropriate environmental conditions must be kept and available upon request.

Environmental parameters for storage, such as temperature and humidity, must be controlled and should be monitored using calibrated monitoring devices. The documented evidence of the monitoring of these parameters must be maintained. Temperature monitoring probes or devices should be located at points that represent extreme temperature areas, as determined by a temperature mapping study, if applicable. If the storage area has an alarm system with audible signals, alarm activation points should be set at temperatures that allow time for appropriate corrective actions before the CTO reach unacceptable temperatures. The alarm warning should signal in a location that is continually monitored or staffed so that corrective action can be taken immediately.

There must be written procedures describing the actions to be taken in the event of deviations from established storage criteria. Such an event must be appropriately investigated and documented.

Access to storage areas must be restricted to designated personnel. Where physical quarantine areas are used, they must be marked appropriately, with access restricted to designated personnel. Where electronic quarantine is used, electronic access must be restricted to designated personnel.

The appropriate environmental conditions for shipping CTO must be defined in a procedure. When specified, controls for temperature, light, etc. must be in place. Documentation that the CTO were maintained under the appropriate environmental conditions must be kept and available upon request.

If an establishment accepts returns of a CTO, a process must be in place, which includes all necessary documented procedures and defined acceptability criteria, that will give the
establishment assurance that the CTO have been maintained under appropriate storage conditions, and that their integrity has not been compromised. This process should be defined in the establishment’s SOP. At a minimum, this should include documented evidence: that the CTO was maintained under appropriate conditions, that the integrity of the packaging material and the labels were not compromised, that there was no evidence of contamination or tampering and, that the unopened CTO package was free of damage. Any CTO without a label cannot be shipped or accepted by an establishment.

Segregation — tissues

38. An establishment that stores tissues must ensure that those that are intended for autologous use are segregated from those intended for allogeneic use.

Tissues for autologous use must be segregated from tissues for allogeneic use during storage to prevent the unintended distribution or release of autologous tissue for allogeneic use. Segregation also helps to increase the likelihood that autologous tissues receive the special handling and tracking they require, as tissues for autologous use may not have been processed according to the same standards as tissues intended for allogeneic use.

Autologous tissues must be clearly labelled as such and stored separately in restricted areas that ensure their segregation from allogeneic tissue.

Segregation may be achieved most effectively by storing allogeneic and autologous tissues in different storage equipment. If autologous and allogeneic tissues are to be stored in the same storage equipment, the storage areas for each within the storage unit must be physically separated and clearly labelled as such, in order to allow tissues intended for autologous use to be distinguished from tissues that are for allogeneic use.

Segregation — transmissible disease agents and markers

39. An establishment that stores cells, tissues or organs must ensure that any of them that are untested or for which the results of tests on donor blood samples are positive or reactive for transmissible disease agents or markers or are unavailable are segregated from all other cells, tissues and organs.

All CTO must be clearly labelled and stored separately in restricted areas, or controlled by a system that ensures the segregation of the following:

• CTO that are untested or that are quarantined prior to the completion of testing for transmissible disease agents or markers,
• CTO that are found to be unsuitable for use, unsafe, recalled and/or tested positive or reactive for transmissible disease agents or markers,
• CTO that have been tested and are suitable for release/distribution or use.
The actions taken and the final status related to each CTO must be recorded.

2.10 **Exceptional Distribution** (Sections 40 to 42 of the CTO Regulations)

<table>
<thead>
<tr>
<th>Conditions</th>
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<tbody>
<tr>
<td><strong>40.</strong> A source establishment may distribute cells, tissues or organs that have not been determined safe for transplantation if all of the following conditions are met:</td>
</tr>
<tr>
<td>(a) a cell, tissue or organ that has been determined safe for transplantation is not immediately available;</td>
</tr>
<tr>
<td>(b) the transplant physician or dentist, based on their clinical judgement, authorizes the exceptional distribution; and</td>
</tr>
<tr>
<td>(c) the transplant establishment obtains the informed consent of the recipient.</td>
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</tbody>
</table>

Given the urgent and life-saving/life-enhancing nature of transplantations, it is recognized that in exceptional circumstances, a CTO may be needed for transplantation, and a compatible CTO may be available but has yet to be deemed safe for transplantation as required by the CTO Regulations. For this reason, these Regulations provide a mechanism, referred to as “exceptional distribution”, to allow for the distribution of CTO that may not meet all of the requirements of the CTO Regulations when no fully compliant CTO is available.

The intent of these Regulations is to maximize the safety of CTO used in transplantation, not to determine the suitability of a CTO for a specific recipient. For CTO to be deemed “safe” under the CTO Regulations, all of the requirements of these Regulations must have been met. There are circumstances, such as using a Hepatitis C positive CTO in a Hepatitis C positive recipient, where a CTO may be suitable, even if under these Regulations this CTO has not been deemed “safe”. Other similar situations occur when, for example, not all the information from the donor screening questionnaire is available, but the use of the CTO is acceptable given the direness of the intended recipient's situation. In these situations, the suitability of a CTO is a matter of clinical discretion and/or judgement. For this reason, exceptional distribution from a source establishment requires that the transplant physician authorize the use of the CTO, and that the recipient give their informed consent for that use.

In recognition of the urgent nature of CTO donation, the CTO Regulations do not specify when the requirements of section 40 have to be met, provided they are fulfilled prior to the transplantation. For example, a patient may consent to the use of an exceptionally distributed CTO in advance of the transplantation.
Notice in source establishment’s records

41. (1) A source establishment that distributes cells, tissues or organs under section 40 must keep a copy of the notice of exceptional distribution in its records.

Notice in transplant establishment’s records

(2) The transplant establishment must keep a copy of the notice of exceptional distribution in its records.

Contents of notice

(3) A notice of exceptional distribution must contain all of the following information:

(a) the name of the transplanted cell, tissue or organ;
(b) the provisions of these Regulations with which the cell, tissue or organ is not in compliance at the time of its distribution;
(c) the justification for the distribution that formed the basis for the transplant physician’s or dentist’s decision to authorize it;
(d) the name of the source establishment that distributed the cell, tissue or organ;
(e) the name of the transplant establishment and of the transplant physician or dentist who authorized the distribution; and
(f) the time and date of the written authorization of the distribution and a copy of the authorization signed by the transplant physician or dentist.

The above section requires a source establishment to put a notice of exceptional distribution in their records whenever a CTO that has not met all the requirements of the CTO Regulations is distributed. Similarly, these Regulations require that a notice of exceptional distribution be put in the transplant establishment records. The notice of exceptional distribution must contain the information stipulated under subsection 41(3) of these Regulations.

Follow-up

42. A source establishment that distributes a cell, tissue or organ under section 40 before the donor suitability assessment is complete must, after the distribution, complete the assessment, carry out any other appropriate follow-up testing and notify the relevant transplant establishment of the results.

It should be noted that, according to section 42, a source establishment that has not completed the donor suitability assessment, and distributes a CTO under the conditions of exceptional distribution, must complete the assessment and carry out any other appropriate follow-up testing after distributing the CTO. The CTO Regulations also require that the source establishment notify the relevant transplant establishment of the results.
2.11 Errors, Accidents and Adverse Reaction Investigation and Reporting (Sections 43 to 54 of the CTO Regulations)

**Required action**

43. (1) Subject to subsection (2), an establishment that is not a source establishment and that has reasonable grounds to believe that the safety of a cell, tissue or organ that is or was in its possession has been compromised by the occurrence of an error or accident during processing must immediately take all of the following steps:

(a) determine the donor identification codes of all implicated cells, tissues and organs;

(b) identify and quarantine any other implicated cells, tissues and organs in its possession; and

(c) notify the following establishments:

(i) the relevant source establishment, and

(ii) if the cells, tissues or organs were imported, the establishment that imported them.

**Exception — importers**

(2) If the establishment that receives a notice under subsection (1) is the establishment that imported the implicated cells, tissues or organs, it only has to notify the source establishment.

**Contents of notice**

(3) The notice must include all of the following information:

(a) the reasons for the establishment’s belief that the safety of cells, tissues or organs has been compromised;

(b) an explanation of how the safety of the implicated cells, tissues or organs may have been compromised, if known;

(c) the donor identification codes of all implicated cells, tissues and organs; and

(d) the name of any suspected transmissible disease or disease agent, if known.

**Written notice**

(4) If the notice is given verbally, a confirmatory written notice must be sent as soon as possible afterwards.

These requirements apply to establishments other than a source establishment that discover or suspects that an error/accident has occurred during processing. The CTO Regulations require that these establishments report to the source establishment and to the importer (if applicable) without delay, all known or suspected errors or accidents that are associated with the CTO that are or were in its possession if they occurred during processing. They must identify all the CTO implicated in the error or accident. All the implicated CTO must
be quarantined so as to prevent the transplantation or further distribution of implicated CTO. The
source establishment and the importer are identified on the exterior label as required under
section 33 of these Regulations.

**These requirement apply to importers.** Upon receipt of the notice under subsection 43(1), if
the importer believes, based on all available information, that there are reasonable grounds to
believe that the safety of the implicated CTO that are or were in its possession has been
compromised by the occurrence of an error or accident during the processing, it must quarantine
all implicated CTO (if still in its possession). The importer must also notify the source
establishment as set out under section 43. The written notice should be sent by the next business
day.
44. (1) A source establishment that has reasonable grounds to believe that the safety of cells, tissues or organs for whose processing it is responsible has been compromised by the occurrence of an error or accident during processing must immediately take all of the following actions:

(a) quarantine any implicated cells, tissues and organs in its possession;

(b) send a notice described in subsection (2) to all of the following establishments:

(i) if the cells, tissues or organs were imported, the establishment that imported them,
(ii) any source establishment from which it received the donor referral, if applicable,
(iii) any source establishment to which it made a donor referral, if applicable, and
(iv) any establishment to which it distributed implicated cells, tissues or organs; and

(c) initiate an investigation into the suspected error or accident.

Contents of notice

(2) The notice must include all of the following information:

(a) the reasons for its belief that the safety of the cells, tissues or organs has been compromised;

(b) an explanation of how the safety of the implicated cells, tissues or organs may have been compromised, if known;

(c) the donor identification codes of all implicated cells, tissues and organs;

(d) the name of any suspected transmissible disease or disease agent, if known; and

(e) a statement requiring all implicated cells, tissues and organs to be quarantined immediately and until further notice from the source establishment and specifying any other corrective action that must be taken.

These requirements apply to source establishments. A source establishment that has reasonable grounds to believe, based on its own information and the information received under section 43, that the safety of CTO for which it is responsible for processing (done by itself or done by another establishment on its behalf), has been compromised by the occurrence of an error or accident during processing, must immediately take the actions listed under subsection (1). The processing, in respect of CTO, means any of the following activities: donor screening; donor testing; donor suitability assessment; retrieval, except for organs and islet cells, testing and measurements performed on the CTO after they are retrieved; preparation for use in
transplantation, except for organs; preservation; quarantine; banking; and packaging and labelling.

It is expected that a source establishment will notify all known establishments which received the implicated CTO within the same business day by telephone if it has reason to believe that the implicated CTO poses any danger to potential recipients. Written notices are expected to be faxed by the next business day. The source establishment must quarantine implicated CTO in a manner as described under section 39 and secured from all other compliant CTO.

**When no investigation necessary**

45. If, on receipt of a notice under subsection 43(1), the source establishment does not have reasonable grounds to believe that an investigation is necessary, it must notify the establishment to that effect in writing and provide its reasons for the decision not to conduct an investigation.

In the case that a source establishment, based on notification received under section 43 and with all available information, has no reasonable grounds to believe that the safety of CTO for which it is responsible for processing has been compromised by the occurrence of an error or accident during processing, it must include within its records a detailed rationale for the decision, as set out under subsection 59 (h) of the CTO Regulations. A follow-up must be provided to all establishments that contacted the source establishment regarding the suspected error and accident in order to inform them of the decision made and of the appropriate actions to be undertaken regarding the quarantined CTO.

**Action on receipt of notice**

46. An establishment that is not a source establishment and that receives a notice under section 44 or a copy of such a notice under this section must immediately take both of the following actions:

(a) quarantine all implicated cells, tissues and organs in its possession; and

(b) forward a copy of the notice to every establishment to which it distributed implicated cells, tissues or organs.
47. (1) Subject to subsection (2), an establishment that is not a source establishment and that has reasonable grounds to believe that an unexpected adverse reaction has occurred must immediately take all of the following steps:

(a) determine the donor identification codes of the transplanted cells, tissues or organs;
(b) identify and quarantine any other cells, tissues and organs in its possession that could potentially cause an adverse reaction in the same way as the transplanted cells, tissues or organs; and
(c) notify the following establishments:
   (i) the relevant source establishment, and
   (ii) if the cells, tissues or organs were imported, the establishment that imported them.

Exception — importers

(2) If the establishment that receives a notice under subsection (1) is the establishment that imported the implicated cells, tissues or organs, it only has to notify the source establishment.

Contents of notice

(3) The notice must include all of the following information:

(a) a description of the adverse reaction;
(b) the donor identification codes of all implicated cells, tissues and organs; and
(c) the name of any suspected transmissible disease or disease agent, if known.

Written notice

(4) If the notice is given verbally, a confirmatory written notice must be sent as soon as possible afterwards.

An unexpected adverse reaction following the transplantation of a CTO includes the unintended and unforeseen transmission of an infectious disease or disease agent, for example any bacterial, viral or fungal infection that is caused by a contaminated transplanted CTO. It does not include the transmission of an infectious disease or disease agent where such transmission is expected.

For example, the transmission of HCV from an HCV positive donor to an HCV negative recipient would not be an unexpected adverse reaction, as this would be an expected outcome resulting from the use of an HCV positive organ. In the case where the recipient develops HCV following transplantation of an organ that was not known to be HCV positive, such an outcome would be considered an unexpected adverse reaction.
These requirements apply to establishments other than source establishments that discover or suspect that an unexpected adverse reaction has occurred. Section 47 of the CTO Regulations require that establishments must report to the source establishment and the importer (if applicable) all suspected or known unexpected adverse reactions associated with a CTO without delay. In order to comply with this requirement, the establishment must clearly identify the CTO in question. In addition, where there are other implicated CTO (for example from the same donor) in the establishment’s possession, they must be identified and quarantined.

These requirements apply to importers. Upon receipt of the notice under subsection 47(1), an importer of a CTO is required to notify the source establishment of the adverse reaction.

Subsection 47(3) of the CTO Regulations require that the notice include a description of the adverse reaction. This description should be as detailed as possible, in order to aid in the investigation of the adverse reaction. The donor identification codes of the implicated CTO and, where applicable, the name of the disease or disease agent suspected to have been transmitted must be included in the notice as well.

Given the time sensitive nature of the reporting of adverse reactions suspected to be associated with CTO, it is acceptable to provide the initial notice verbally. But a written notice must be issued as soon as possible, preferably by the next business day.
48. (1) A source establishment that has reasonable grounds to believe that an unexpected adverse reaction has occurred that involves cells, tissues or organs for whose processing it is responsible must immediately take all of the following actions:

(a) quarantine any implicated cells, tissues and organs in its possession;

(b) send a notice described in subsection (2) to all of the following establishments:

(i) if the implicated cells, tissues or organs were imported, the establishment that imported them,

(ii) any source establishment from which it received the donor referral, if applicable,

(iii) any source establishment to which it made a donor referral, and

(iv) any establishment to which it distributed implicated cells, tissues or organs; and

(c) initiate an investigation into the adverse reaction.

(2) The notice must include all of the following information:

(a) a description of the nature of the adverse reaction;

(b) an explanation of how the safety of the implicated cells, tissues or organs may have been compromised, if known;

(c) the donor identification codes of all implicated cells, tissues and organs;

(d) the name of any suspected transmissible disease or disease agent, if known; and

(e) a statement requiring all implicated cells, tissues and organs to be quarantined immediately and until further notice from the source establishment and specifying any other corrective action that must be taken.

An unexpected adverse reaction following the transplantation of a CTO includes the unintended and unforeseen transmission of an infectious disease or disease agent. It does not include the transmission of an infectious disease or disease agent where that outcome is expected.

For example, transmission of HCV from an HCV positive donor to an HCV negative recipient would not be an unexpected adverse reaction, as this would be an expected outcome resulting from the use of an HCV positive organ. Where the recipient develops HCV following transplantation of an organ that was not known to be HCV positive, such an outcome would be considered an unexpected adverse reaction.

These requirements apply to source establishments that discover or suspect that an unexpected adverse reaction has occurred. The CTO Regulations require that the source
establishment that discovers or suspects that an unexpected adverse reaction has been associated with a CTO must take action as outlined in section 48 of these Regulations. All implicated CTO in the control of the source establishment must be quarantined. A notice, as described in subsection 48 (2) of these Regulations, must be issued to all parties listed above. The description of the unexpected adverse reaction should include a detailed narrative listing the consequences and outcomes experienced by the patient.

The source establishment must begin an investigation into the unexpected adverse reaction. This investigation should, at a minimum, include the information being requested in the notice. Section 51 of these Regulations further describes the investigation.

49. An establishment that is not a source establishment and that receives a notice under section 48 or a copy of such a notice under this section must immediately take both of the following actions:

(a) quarantine all implicated cells, tissues and organs in its possession; and
(b) forward a copy of the notice to every establishment to which it distributed implicated cells, tissues or organs.

These requirements apply to establishments other than a source establishment that receive a notice under section 48 of the CTO Regulations. Section 49 of these Regulations state that an establishment that is not a source establishment and that receives a notice under section 48 must quarantine all implicated CTO over which it has control. It also requires that a copy of the notice received must be sent to all establishments to which it has sent implicated CTO.

50. An establishment must provide the source establishment that is conducting an investigation with any relevant information in its possession with respect to cells, tissues or organs that it distributed or transplanted.

All establishments contacted by a source establishment conducting an investigation have a responsibility to assist in the investigation and provide all relevant information to the source establishment without delay. This includes, but is not limited to, an inventory list of implicated CTO with their disposition (number and type processed, distributed, transplanted, quarantined, and destroyed) and the names of establishments to which the implicated CTO have been distributed.
51. (1) A source establishment that is conducting an investigation into either of the following subject-matters must provide the Minister with the reports described in subsection (2):

(a) a suspected error or accident that is identified after distribution of cells, tissues or organs that could lead to a serious adverse reaction involving the transmission of an infectious disease or disease agent; and

(b) an unexpected serious adverse reaction that is thought to involve the transmission of an infectious disease or disease agent.

(2) The reports must include the following information and be provided at the following times:

(a) within 24 hours after the start of the investigation, a preliminary report that includes all relevant information that is available at that time; and

(b) within 15 days after the start of the investigation and every 15 days after that until the final report is made, an update on any new information about the suspected error or accident or serious adverse reaction, on the progress made in the investigation during those 15 days and on the steps taken to mitigate further risks.

In the context of these Regulations, the Minister is represented by the Health Canada Health Products and Food Inspectorate (HPFI) for reports of a suspected error or accident that is identified, and the Marketed Health Products Directorate (MHPD) for reports of an unexpected adverse reaction that is thought to involve the transmission of an infectious disease or disease agent.

Within 24 hours of the start of an investigation, the source establishment must report to Health Canada all available information regarding the suspected error and accident or the unexpected serious adverse reaction. Only those errors and accidents that are identified after the distribution of CTO and that could lead to a serious adverse reaction involving the transmission of an infectious disease or disease agent, or an unexpected serious adverse reaction that is thought to involve the transmission of an infectious disease or disease agent, must be reported to Health Canada.

The information provided in this report could include, but is not be limited to, the name of the suspected infectious disease/ and/or disease agent, the description of the CTO, the number of recipients potentially affected, and the identification code of the donor(s) (if known).

This requirement to report to Health Canada does not supersede the establishment's requirement to report designated infectious diseases to public Provincial/Territorial Health Authorities.
If a source establishment can determine before the start of an investigation that no CTO affected by the error, accident or adverse reaction has been exported to Canada, it does not need to report it to the Minister. However, it is recommended that the establishment inform the Minister that an error, an accident or an adverse reaction involving CTO not exported to Canada has taken place, so as to avoid miscommunications.

If it is determined during the course of the investigation that no CTO involved in the error, accident or adverse reaction was exported to Canada, the establishment must provide to the Minister all reports described in sections 51 and 54 of the CTO Regulations.

Error and Accident Reporting (directed to HPFI)
To avoid unnecessary delays, source establishments are requested to provide the information required under section 51 of the CTO Regulations to the appropriate HPFI Operational Centre. A list is provided below.

Canadian source establishments can send all error and accident reports to the appropriate Operational Centre to the attention of the Operational Centre Manager. All establishments can refer to Appendix 3 in order to determine to which Operational Centre they should send their reports.

ATLANTIC OPERATIONAL CENTRE
Health Canada
Health Products and Food Inspectorate
1505 Barrington Street, Suite 1625
Halifax, Nova Scotia, B2J 3Y6
T 902-426-5350
F 902-426-6676

QUEBEC OPERATIONAL CENTRE
Health Canada
Health Products and Food Inspectorate
1001 West St-Laurent Blvd.
Longueuil, Québec, J4K 1C7
T 450-646-1353
F 450-928-4455
A link to the error and accident report form “Human Cells, Tissues and Organs for Transplantation - Error or Accident Preliminary Investigation Report Form (FRM-0172)” (http://www.hc-sc.gc.ca/dhp-mps/compli-conform/info-prod/cell/frm_0172_tc-tm-eng.php) can be found on the Health Canada Web site. Although this form is recommended, other formats will be accepted, as long as the information requested on the form is provided. This report form should only be used for the initial investigation report to the HPFI and not for the ongoing or the final investigation report.

**Investigation**

During an investigation, a source establishment is to determine whether any other CTO are affected, and the status of the implicated CTO (the number of CTO processed, distributed, quarantined, transplanted and destroyed and the number of establishments contacted). Source establishments are to consider whether any additional tests are required (eg. donor testing, archived serum sample testing, bacteriological testing). Testing results must meet the requirements of the CTO Regulations. A protocol is to be developed to describe the interpretation of laboratory results. Criteria are to be developed for acting on positive (reactive) results.
Any documentation pertaining to the investigation must be available for review by Health Canada upon request.

Reports
Every 15 days after the start of the investigation, and until the final report is submitted, the source establishment is to provide the HPFI with an update on any new information about the suspected error or accident, on the progress made in the investigation during those 15 days, and on the steps taken to mitigate further risks, including root cause analysis and planned corrective actions. The updates are to include information regarding the number of CTO processed, distributed, quarantined, transplanted and destroyed and the number of establishments contacted.

The Minister may request a recall based on the information received. A recall is a set of actions taken by an establishment to remove a product (CTO) from the market which represents a health risk for Canadians, or which otherwise contravenes the F&DA.

At any time during the investigation, Health Canada can request additional information as set out under section 14 of these Regulations.

Adverse Reaction Reporting (directed to the MHPD)
Only unexpected serious adverse reactions that are thought to involve the transmission of an infectious disease or disease agent must be reported to Health Canada. All such adverse reaction reports as well as follow up reports of these adverse reactions for CTO covered by this guidance document should be sent to:

Canada Vigilance
Marketed Health Products Safety and Effectiveness Information Bureau
Marketed Health Products Directorate
Tunney's Pasture
Address Locator: 0701C
Ottawa, Ontario
K1A 0K9
T: 613-957-0337
F: 613-957-0335

The adverse reaction report form (http://www.hc-sc.gc.ca/dhp-mps/medeff/report-declaration/index-eng.php) is available on the Health Canada Web site. This report form can be used for the initial investigation report as well as any follow-up reports to the MHPD.

At any time following the receipt of an adverse reaction report, the MHPD may request additional information as set out under section 14 of the CTO Regulations.
When investigation shows no contamination or compromise

52.  (1) If the results of the investigation show that the implicated cells, tissues or organs are not contaminated or compromised, the source establishment must notify every establishment that was notified under section 44 or 48 to that effect in writing and that they may be released from quarantine.

Forwarding of copies of notice

(2) On receipt of a notice under subsection (1), an establishment that is not a source establishment must forward a copy of the notice to every establishment to whom it distributed implicated cells, tissues or organs.

Where it is determined that the implicated CTO are not contaminated, the CTO may be distributed. The source establishment should prepare a list containing the identification codes of all CTO that were declared not contaminated. The source establishment must then notify, in writing, all the establishments that were previously notified under section 44 or 48 of the CTO Regulations that the CTO with the identification codes specified in the list may be distributed. The source establishment may distribute the CTO in its possession that have the identification codes specified on the list.

When investigation inconclusive or shows contamination or compromise

53.  (1) If the results of the investigation show that some or all of the implicated cells, tissues or organs are contaminated or compromised, or the results are inconclusive, the source establishment must notify every establishment that was notified under section 44 or 48 to that effect in writing and that they may not be released for distribution.

Forwarding of copies of notice

(2) On receipt of a notice under subsection (1), an establishment that is not a source establishment must forward a copy of the notice to every establishment to whom it distributed implicated cells, tissues or organs.

Where it is determined that the CTO are contaminated or the results are inconclusive, the implicated CTO are to be destroyed or reserved for distribution under exceptional distribution as stated under section 40 of the CTO Regulations. The source establishment is to prepare a list containing the identification codes of the CTO that are contaminated or where the results of the investigation are inconclusive. It must also notify all establishments that were previously notified under section 44 or 48, in writing, that all implicated CTO having the identification codes specified on the list must be quarantined and are considered unsafe for transplantation. The source establishment is to destroy the implicated CTO in its possession, except if they are reserved for distribution under exceptional distribution.
Final report to Minister

54. (1) On completion of an investigation, the source establishment must submit a detailed final report to the Minister that contains at least all of the following information:

(a) the results of the investigation;
(b) the final disposition of the cells, tissues and organs that were the subject of the investigation and the reasons for that disposition; and
(c) any corrective actions taken.

Summaries of final reports

(2) The source establishment must send a summary of the final report to every establishment that was notified under section 44 or 48.

Forwarding of summaries

(3) An establishment that receives a summary under subsection (2) must send a copy of it to every establishment to which it distributed implicated cells, tissues or organs.

Upon completion of the investigation, the source establishment is to notify and provide a final report to the HPFI or MHPD, as appropriate. The final report provided is to be detailed and is to indicate the results of the investigation; it should include conclusions, specify any infectious agent(s), results of any tests performed, follow-up and corrective actions taken, and details of the reconciliation of the CTO and their final disposition (number processed, distributed, transplanted, quarantined, destroyed).

Others requirements

Under subsection 59(h), a source establishment is required to keep records of any errors, accidents and adverse reactions associated with CTO it has processed or transplanted, and any corrective action taken. In addition, the source establishment must keep the records of its investigation along with the assessment and monitoring as set out under subsection 59(h).

Under subsection 60(f), a transplant establishment is required to keep records of any errors, accidents and adverse reactions associated with CTO it has transplanted, and any corrective action taken.

Furthermore, establishments are required under subsection 74(2) to review any SOP based on the receipt, from the source establishment, of a summary report of an error, accident investigation or a follow up report to an adverse reaction investigation that revealed a deficiency.
2.12 **Records** (Sections 55 to 63 of the CTO Regulations)

**Record quality**

55. Records kept by an establishment must be accurate, complete, legible and indelible.

All records must identify the person performing the activities carried out and the dates of the various entries. All manual transcriptions of test results must be independently verified.

The records must be retained in a comprehensible and accessible form and any hand written entry of information must be made using indelible ink. A cross-out is to be used for correction of text in a paper document. Any correction, entry of information, or notation made after the original date of record completion must be initialled or signed, and dated in such a way as to allow a reader to differentiate between the original and amended information.

One standardized format for dates (e.g., YYYY/MM/DD or MM/DD/YY) should be used for all records.

Electronic records must have evidence of their integrity and must be accessible when needed.

**Donor identification code — source establishment**

56. (1) A source establishment must assign a donor identification code to each donor of a cell, tissue or organ for which it has responsibility.

**Donor identification code — all establishments**

(2) Every registered establishment and transplant establishment must ensure that the donor identification code is a component of its records system.

The donor identification code is an identifier, assigned by a source establishment, that corresponds uniquely to all CTO from that donor processed by, or on behalf, of the given source establishment. The donor identification code will associate the CTO with information about the donor from which it was retrieved. Depending on how many CTO were retrieved, a donor may have more than one donor identification code associated with them. This is because the source establishment may be different for each CTO, and all source establishments must assign a donor identification code to every donor it is responsible for processing.

For example, in the case of a multiple tissue/organ donor, where bone, ocular tissue, kidney and liver were to be retrieved from the donor, an ODO would be the source establishment responsible for the processing and safety of the organs and therefore would assign a donor identification code to the organs. Similarly, the tissues might be sent to a comprehensive tissue bank for processing and this tissue bank would assign a donor identification code to the tissues that it processes from that donor. Thus the donor would be associated with two different donor...
identification codes. If however, the bone and ocular tissues were sent to a bone and eye bank rather than a comprehensive tissue bank, then each of these establishments and the ODO would assign a donor identification code, and so the donor would be associated with three different identification codes.

Health Canada recognizes that having one identification code per donor might be preferable. However, there are generally different source establishments for each of the different types of CTO, located in different provinces, regions and countries, the logistics of having one identification code per donor would be extremely difficult; it would require the collaboration of all of the individual programs to create a single donor coding system, or the establishment of a single national organ and tissue donation body.

Even though it is not currently possible to have a single identification code for every CTO donor at this time, it is still necessary that each CTO be associated with information about the donor from which it was retrieved, and any processing activities that it underwent. For this reason, subsection 56(2) of the CTO Regulations requires that the donor identification code be a component of the record keeping system used by all registered and transplant establishments.

A source establishment may assign other numbers or codes to a CTO in addition to the donor identification code, for the purposes of their own record keeping. Likewise, other establishments involved in the processing of a CTO may also assign their own numbers or codes to that CTO for their records. For this reason, under sections 30 to 32 of the CTO Regulations, the donor identification code must be clearly labelled as such. This will ensure that everyone that handles a CTO will be able to identify and record the donor identification code that was assigned by the source establishment.

Records must contain information about the establishment from which CTO are received and establishments to which CTO are distributed. Requiring each establishment to record this information maintains traceability throughout the chain of distribution. In addition to the name of each establishment, records should include the following information:

- identity of each CTO received or distributed, by the donor identification code and other attributes with the corresponding date;
- information from the retrieval establishment that identifies the donor;
- the establishment address;
- the establishment phone and fax numbers;

Requirement

57. An establishment’s records must contain information with respect to all cells, tissues and organs that it processes, distributes, imports or transplants that identifies

(a) the establishment from which it receives the cells, tissues and organs; and

(b) all establishments to which it distributes the cells, tissues and organs.
• contact information in case of an emergency;
• an emergency phone number; and
• the establishment registration number, if applicable.

Shipping documents

58. An establishment’s records must include all shipping documents with respect to cells, tissues and organs that it ships to another establishment.

Source establishment records

59. The source establishment must keep records with respect to cells, tissues and organs that it processes that contain at least all of the following information:
   (a) the donor identification code;
   (b) documentation showing completion of the donor suitability assessment;
   (c) a description of the cells, tissues and organs retrieved from the donor;
   (d) if applicable, the name of any source establishment from which it received a donor referral or to which it made a donor referral;
   (e) the name of the retrieval establishment;
   (f) documentation of all processing activities;
   (g) the notice of exceptional distribution, if any; and
   (h) documentation of any reported errors, accidents and adverse reactions and their investigation, if any, in connection with cells, tissues or organs retrieved from the donor that it banked or distributed and any corrective action taken.

It is not necessary that traceability information be contained in the donor chart, but it is to be contained in records kept by the source establishment.

Records are a critical component of any QA system. They are documented evidence of compliance, and must be maintained concurrently with the performance of each significant step in the processing, importation, storage, distribution (including exceptional distribution), transplantation and investigation of error and accident and adverse reaction of each CTO so that all steps can be clearly associated with the person, time/date and location of such activities.

Aside from other recording requirements that are covered under various sections of this document, the following requirements are specific to processing activities.

Processing equipment records:
Records must be maintained for each piece of equipment that could affect the quality and the
safety of the CTO. These records must include, but are not limited to the following:

• identity of the equipment;
• serial number or other unique identifier;
• manufacturer’s name and contact information;
• date the equipment was received, put into service, and if applicable, out of service;
• manufacturer’s instructions, if available, or reference to their retention;
• equipment performance records that confirm the equipment’s suitability for use (equipment qualification), including calibration and/or verification records (which should incorporate such information as dates of tests, test results, adjustments made, acceptance criteria and frequency of checks);
• schedules of completed and anticipated maintenance activities;
• any damage, malfunction, modification or repair, of the equipment;
• usage log sheet; and
• records of recall.

These records should be readily available for the life span of the equipment and should be kept for one year after the expiry date of the last product processed by this equipment.

Each item of equipment should be uniquely labelled, marked or otherwise identified.

**Testing records:**
Source establishments must have records which indicate that all laboratory testing of transmissible disease markers are performed in accordance with the corresponding test kit manufacturer’s instructions.

Where applicable, records of written agreement between the source establishment and any testing laboratory should be in place to provide relevant information, including:

• the appropriate tests to be performed for each sample;
• a stipulation that the laboratory is to follow the manufacturer’s instructions and perform the tests within the limits and time frames suggested by the manufacturer;
• a stipulation that the test kits used to test donors for the transmissible disease agents or markers required in the CTO Regulations comply with these Regulations;
• testing validation data;
• the method of reporting results to source establishment and an interpretation of the results; and
• names and titles of personnel responsible for the review and release of testing results.

Records of all test kits used during the processing should include, but are not limited to:

• the name of the test kit;
• the lot number;
• the name, lot number and expiry date of the solutions and reagents used;
• the expiry date;
• catalogue number;
• the name of the manufacturer;
• testing validation data; and
• records of recall, if applicable.

For testing laboratories, detailed testing records and logs including QC controls, calibration, maintenance and other supporting documents are to be made readily accessible to the source establishment.

**Critical supplies records (e.g. devices, instruments, reagents, containers):**
Records must be maintained for each critical supply item that could affect the quality and the safety of the product. These records must include, but are not limited to the following:
• identity of the supply, including type, lot number;
• manufacturer’s name and the contact information;
• expiration date, if applicable;
• manufacturer’s instructions, if available;
• records to demonstrate that nondisposable instruments used in the processing are cleaned, disinfected and/or sterilized to prevent contamination and cross-contamination according to written procedures; and
• records that sterile single-use instruments have been inspected for sterility prior to use, and the name of the person that did the verification.

Where applicable, records of written agreement between the source establishment and the retrieval establishment must be maintained to provide relevant information such as roles and responsibilities of the parties involved. The written agreement should also include an attestation that they are in compliance with the CTO Regulations.

If an error, an accident or an adverse reaction occurs, a report must be written that describes the incident, the investigation, corrective actions taken, and any follow-up activities required.

In addition to the donor identification code, other attributes such as a description of the CTO must be unique to avoid any possible mix-up of their identity (e.g., Achilles Tendon L and Achilles Tendon R).

In the case of a source establishment, documentation of a notice of exceptional distribution as described in subsection 41(3) of the CTO Regulations must be available in its records. Similarly, follow-up assessment and testing results of the donor are to be available in the source establishment’s records.
Transplant establishment records

60. The transplant establishment must keep records with respect to cells, tissues and organs that it transplants that contain at least all of the following information:

(a) a description of the transplanted cells, tissues or organs;
(b) the donor identification code;
(c) the registration number of the source establishment;
(d) the notice of exceptional distribution, if any, and confirmation that the donor suitability assessment was completed as required by section 42;
(e) information that allows the identification of the recipient; and
(f) documentation of any errors, accidents and adverse reactions and their investigation in connection with those cells, tissues or organs and any corrective action taken.

It is not necessary that traceability information be contained in the recipient chart, but it is to be contained in records kept by the transplant establishment.

Records are a critical component of any quality assurance system (QAS). They are documented evidence of compliance, and must be maintained concurrently with the performance of each significant step in the processing, importation, storage, distribution (including exceptional distribution), transplantation and investigation of error and accident and adverse reaction of each CTO so that all steps can be clearly associated with the person, time/date and location of such activities.

In addition to the donor identification code, other attributes such as a description of the CTO must be unique to avoid any possible mix-up of their identity (e.g., Achilles Tendon L and Achilles Tendon R).

In the case of exceptional distribution, a copy of the notice of exceptional distribution must be available in the transplant establishment’s records. Documentation of follow-up assessment and testing must also be available in the transplant establishment’s records.

Establishments to cooperate

61. An establishment must provide the source establishment and the transplant establishment with all of the information described in sections 59 and 60, respectively, that it possesses to complete the establishment’s records.

When two or more establishments are involved in CTO related activities, the relationship and responsibilities of each must be delineated in writing and that documentation must be maintained.
at each establishment.

Furthermore, establishments that are contacted by a source establishment or a transplant establishment for any information described in sections 59 and 60 of the CTO Regulations must provide that establishment with all the information requested.

62. (1) An establishment must keep the following records for at least 10 years after the date of transplantation, if known, or for at least 10 years after the date of distribution, final disposition or expiry of the cell, tissue or organ, as the case may be, whichever is the latest:
   (a) the records described in section 57;
   (b) the records described in section 59, except paragraph (h);
   (c) the records described in section 60, except paragraph (f); and
   (d) the record of destruction or other disposition of the cell, tissue or organ, if applicable.

(2) An establishment must keep the following records for 10 years after the date of their creation:
   (a) the records described in paragraphs 59(h) and 60(f); and
   (b) reports of audits conducted under section 76, if applicable.

(3) An establishment that distributes cells, tissues or organs must keep records of the qualifications, training and competency of its employees for 10 years after the time an individual ceases to be an employee of the establishment.

(4) An establishment that distributes cells, tissues or organs must keep a copy of every version of its standard operating procedures for 10 years after they are superseded by a new version.

With the exception of subsections 59(h) and 60(f), all records relevant to processing, importation, distribution and transplantation of the CTO that the establishment has in its possession must be kept in the following manner:

• If the establishment knows the date of transplantation: the records must be kept at least 10 years after the date of transplantation.
• If the establishment does not know the date of transplantation, the record must be kept at least 10 years after the expiry date, the date of the final disposition or the date of the final distribution of the CTO, as the case may be, whichever is the latest.

Records maintained under subsections 59(h) and 60(f) must be kept for 10 years from the date of
their creation. Other records described in section 62 of the CTO Regulations are to be kept for 10 years from the date of the employee’s departure from the establishment (subsection 3) or the date that the version of the SOP was superseded by a new version (subsection 4).

Records shall be maintained in a manner to preserve their completeness and accuracy over time. Establishments may decide to use microfiche, microfilm or other means of retaining permanent records. Records must be accessible at all times. The establishment must verify the transfer of information to microfiche, microfilm or other media used to retain information. The accuracy of the transfer of information should be verified by an individual other than the individual who transferred the information.

If records are maintained electronically, there must be a system in place to ensure that data integrity of the electronic records is maintained, and that the information can be retrieved and printed as a hard copy.

**Storage of records**

63. An establishment that distributes cells, tissues or organs must store records in a location that has appropriate environmental conditions and that is secure against the entry of unauthorized persons.

Record storage areas must maintain the integrity of the records (e.g., environmental conditions such as temperature and humidity, appropriate building codes for fire and flood prevention). Access to the storage area must be restricted to designated personnel (e.g., QA or the document control staff).

Where records are copied off-site, a contract signed by the establishment and the service provider must detail specific requirements such as those for transport to that site, copy quality, storage conditions, and, where relevant, destruction of original documents.

2.13 **Personnel, Facilities, Equipment and Supplies** (Sections 64 to 69 of the CTO Regulations)

**Sufficient number and qualifications**

64. (1) An establishment that distributes cells, tissues or organs must have sufficient personnel who are qualified by education, training or experience to perform their respective tasks to carry out the establishment’s activities.

**Competency**

(2) An establishment that distributes cells, tissues or organs must have a system for the orientation and training, both initial and ongoing, of personnel and for the evaluation of their competency.
Shortage of personnel or underqualified staff increases the risk of errors and accidents. A sufficient number of qualified personnel must be available to perform the tasks required.

An establishment should prepare and maintain a current organizational chart with clear delineation of lines of responsibility. Job descriptions must describe the qualifications and functions of each staff member.

Personnel must receive initial and ongoing training appropriate for their duties. Training programs must be available prior to the implementation of a new procedure or any revision of an existing procedure, and the effectiveness of the programs shall be assessed by regular competency evaluation. The assessment of competency may include:

- direct observation of performance;
- monitoring of recording and reporting;
- written tests to assess problem-solving skills;
- assessment of knowledge of operating procedures and theory; and
- for personnel who normally perform routine testing, assessment of performance in proficiency tests.

Records of the qualifications, training and continuing competency of individuals must be maintained.

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<thead>
<tr>
<th>Requirements</th>
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<tr>
<td><strong>65.</strong> The facilities of an establishment that distributes cells, tissues or organs must be constructed and maintained to permit all of the following:</td>
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<td>(a) the carrying out of all of its activities;</td>
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<tr>
<td>(b) the efficient cleaning, maintenance and disinfection of the facilities in a way that prevents contamination and cross-contamination;</td>
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<tr>
<td>(c) environmental and microbiological monitoring and control appropriate to the areas where its activities are carried out; and</td>
</tr>
<tr>
<td>(d) controlled access to all areas where its activities are carried out.</td>
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</table>

Premises must be located, designed, constructed and adapted to suit the activities to be carried out. Their design and furnishing must minimize the risk of errors and accidents and microbiological contamination. Premises should be designed so that operations can proceed in an orderly manner.

Facilities must be designed to allow for their effective decontamination and to prevent cross-contamination during the movement of personnel and materials between different areas.
The sanitation program should include the following:

• cleaning requirements applicable to all areas with emphasis on processing areas that require special attention;
• the list of products for cleaning and disinfection, along with the manufacturer’s instructions;
• the responsibilities of any outside contractor;
• disposal procedures for waste material and debris;
• pest control measures;
• microbial and environmental monitoring procedures with alert and action limits in areas where aseptic activities are conducted and susceptible products are processed or packaged.

There must be controlled access to all areas where aseptic activities are conducted and where products and samples are stored.

There must be no direct access from the areas where processing is carried out to the exterior of the building, except for emergency purposes.

Requirements — equipment

66. An establishment that distributes cells, tissues or organs, in carrying out its processing and storage activities, must use equipment that is cleaned and maintained and, whenever applicable,

(a) qualified for its intended purpose;
(b) calibrated;
(c) disinfected or sterilized before each use; and
(d) requalified or recalibrated, as appropriate, after any repair or change is made to it that results in a change to its specifications.

All equipment must be located in a way that facilitates cleaning and maintenance. Cleaning must be performed according to established schedules to prevent contamination, cross-contamination or spread of infectious diseases. The cleaning procedure must be validated to ensure the removal of contaminants and cleaning product residues that could interact with the CTO. Where possible, equipment must be disinfected or sterilized using validated methods to reduce the risk of contamination and cross-contamination.

Where applicable, equipment must be qualified and/or calibrated according to the manufacturer’s instructions, to ensure they consistently operate within established tolerance limits. Equipment maintenance, recalibration and requalification must also be performed according to the manufacturers instructions.
For additional information on equipments, see section 5.3 of the general standard.

Requirements — storage equipment

67. An establishment that distributes cells, tissues or organs that uses equipment to store cells, tissues or adjunct vessels that are not used immediately in organ transplantation must ensure that the equipment maintains appropriate environmental conditions.

All CTO must be stored according to conditions described on the label. When specified on the label, controls for temperature, humidity, light, etc. must be in place. Documentation that the CTO were maintained under the appropriate environmental conditions must be maintained.

Environmental parameters for storage, such as temperature and humidity, must be controlled and should be monitored using calibrated monitoring devices. Records documenting the monitoring of these parameters must be maintained. Temperature monitoring probes or devices should be located at points that represent extreme temperature areas, as determined by a temperature mapping study. If the storage area has an alarm system with audible signals, alarm activation points should be set at temperatures that allow time for appropriate corrective actions before the CTO reach unacceptable temperatures. The alarm warning should signal in a location that is continually monitored or staffed so that corrective action can be taken immediately.

Procedures describing the actions to be taken in the event of deviations from established criteria must be written. Such events must be appropriately documented and investigated.

Processing supplies

68. An establishment that processes cells, tissues or organs must use qualified supplies for those activities that could affect the safety of the cells, tissues or organs, and must store solutions, reagents and other supplies under appropriate environmental conditions.

The person responsible for the establishments’s QA (the medical director, the scientific director or their respective designate) must establish acceptance criteria for the supplies used in the processing of CTO. This should include identifying each specific material for use, setting material specifications, lot release testing and allowable limits of the parameters in the certificate of analysis of each supply material. Supplies should be quarantined until the person in charge of QA finds each specific lot is acceptable for use or release. The conditions of use and storage of each supply must be appropriate as instructed by the manufacturer. The expiry dates of supplies must be strictly observed.
Cleaning supplies

69. An establishment that processes cells, tissues or organs must ensure that it uses supplies for cleaning, maintenance, disinfection or sterilization that do not react with, or that are not absorbable by, the cells, tissues or organs.

The choice of cleaning supplies used in the processing areas should be reviewed to ensure that they do not have any negative effects on the quality and safety of the CTO that they come in contact with. The cleaning supplies must be of the appropriate grade and quality.

Cleaning supplies that could affect the safety of the CTO are to be used or stored according to the manufacturer’s instructions or as stated on the label. They must not generate toxic vapours or degradation products that could contaminate the CTO.

The name and the lot numbers of supplies that are used to clean, disinfect or sterilize equipment and instruments should be recorded and the expiry dates must be strictly observed.

2.14 Quality Assurance System (Sections 70 to 76 of the CTO Regulations)

Application

70. Sections 71 to 76 apply only to establishments that distribute cells, tissues or organs.

Under these Regulations, all importers, establishments that distribute as intermediaries and source establishments that distribute CTO must have a QAS (refer to section 71 below for details). This includes source establishment that are also transplant establishments i.e. in the case of the lymphohematopoietic cells that are not banked.

Quality assurance system required

71. An establishment must ensure that it has a quality assurance system in place that complies with the requirements of these Regulations for all activities that it carries out.

A QAS must be established in order to support the objective of ensuring the maximum quality and safety of the CTO distributed by the establishment. QA consists of all the organized arrangements made and the measures taken to reach this objective.

The QAS must have the following elements:

Management requirements (sections 71 to 76)

- The facility has a QAS in place, which is defined, documented, implemented, maintained
and kept up to date.

- The facility has an organizational structure that defines and documents personnel responsible for any activities under these Regulations.
- Policies, processes and procedures are available to cover all the activities (sections 72 to 75 of the CTO Regulations).
- The senior management is responsible for the establishment to attain its quality objective.
- The QA policies, processes, programs, procedures and instructions must be documented and communicated to all relevant personnel. The establishment’s management must ensure that the documents are understood by personnel and implemented.
- Satellite facilities must be operated in accordance with the establishment’s QAS.

**Documentation system (including sections 72 to 75)**

- Document Control: the facility shall define, document and maintain procedures to control all documents and information that form its quality documentation system.
- Records: the facility must have a system to ensure that all documents required under the CTO Regulations are retained and stored as described under section 62 and 63.
- All documents relevant to the QAS must be uniquely identified and shall be clear, concise and written in a consistent format, and according to facility policies.
- All documents are controlled so that only the current version of SOPs and policies are available for use, and the expired versions are not in circulation.

A system for employing qualified personnel and providing on-going personnel training (see section 64);

A system or program for the security and maintenance of the establishment’s facilities (see section 65);

**Equipment (see section 66)**

**Computer Systems/Data processing control that are used in the processing and distribution of CTO and other regulated activities**

- Processes must be in place for authorizing and documenting modifications to the computer system. Policies must be established which define who may use the computer, who may access recipient/donor data and who is authorized to enter and change results or data, or modify computer programs. There should be processes and procedures to support the maintenance and security of computer systems.

**Process Control**

- The facility must ensure that processes are carried out under controlled conditions, according to written procedures prepared by qualified personnel (sections 72 to 75)
- Change Control: any changes to the processes, materials, equipment and facilities that may impact the quality and safety of CTO must be reflected in the written procedures and
approved before being implemented.

- Changes to SOPs corresponding to section 72 must be approved according to subsection 73 (d) of the CTO Regulations.

**Quality Control**

- The facility must have processes and procedures to monitor and control the quality and safety of the CTO, as required under the CTO Regulations.
- QC Review: Despite sections 40 to 42, every CTO must be determined safe and its release authorized by the medical director or designate before distribution, as applicable (see section 34).

**Suppliers for Critical Supplies and Services (See section 68)**

- Facilities must have policies, processes, and procedures (such as agreements and audits), to evaluate the ability of suppliers of critical materials and services to consistently meet specified requirements.

**Errors and Accidents and Adverse Reactions Reporting, and Investigations (described in sections 43 to 54).**

- There must be an errors, accidents and adverse reaction management system to ensure they are identified, recorded, reported, evaluated, investigated, and followed.
- Corrective action must be approved and implemented when required.
- Each facility must maintain a system of control that permits a complete and rapid recall of any CTO that has been distributed, when required.

**Audit program (see section 76).**

**The QAS should have the following elements:**

**Preventive action**

Procedures for preventive action should include: analysis of data, including trend- and risk-analyses, external QA and monitoring of effectiveness. If preventive action is required, action plans should be developed, implemented and monitored to reduce the likelihood of the occurrence of non-conformance and to take advantage of the opportunities for improvement.

**Customer Complaints and Corrective Actions**

The facility should have a policy and procedures for the investigation and handling of complaints.

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**Standard operating procedures required**

72. An establishment must have standard operating procedures with respect to the safety of cells, tissues and organs for all activities that it carries out.

All activities that could affect the safety and quality of CTO must be described in written SOPs.
that have been approved by the medical director, the scientific director or their respective designate. These SOPs must be considered part of the establishment records pertaining to the processing, distribution and importation of CTO.

For example, such SOPs could be in place for the following activities:

- processing;
- label control and verification;
- final safety assessment of CTO, storage, distribution, importation;
- record keeping, adverse reactions and errors and accident reporting and notification;
- investigation of errors, accidents and adverse reactions;
- recall;
- facility cleaning and maintenance and environmental monitoring; and
- maintenance, cleaning, calibration and qualification of equipment and instruments, if applicable;
- exceptional distribution; and
- personnel training.

**Requirements**

73. The standard operating procedures must meet all of the following requirements:

(a) be in a standardized format;
(b) be approved by the medical director or scientific director;
(c) be available for use at all locations where the relevant activities are carried out;
(d) have any changes to the procedures approved by the medical director or scientific director before being implemented; and
(e) be kept up-to-date.

SOPs provide personnel with instructions or directions so that activities are performed and documented consistently and in compliance with regulatory requirements.

The issuance of SOPs and any changes must be maintained by a document control system that ensures that the SOP is current and authorized by the medical director, the scientific director or their respective designate. In an urgent situation, alteration of a current SOP version is allowed if permitted by the medical director or the scientific director and the alteration made is signed and dated. The reason for any change or deviation must be documented. Invalid or obsolete documents must be promptly removed to prevent their inadvertent use.

The format of each SOP is to indicate, at a minimum, the following:

- the type of procedure;
- the title and purpose of the procedure;
- the unique number identifying the document and indicating revision(s);
the date that the SOP became effective and the date(s) that it was revised;
• the signature of the authorizing person and the date of authorization;
• on each page, the page number (of the total number of pages);
• a clear outline of steps and instructions to be followed in the described procedure which matches the details in the processing records (e.g., worksheets, forms or computer screens), if applicable;
• staff categories responsible for performing all or part of the steps in the SOP;
• the tolerance limits applied to tests; and
• references to publications cited in support of the policies and procedures.

### Routine review

**74.** (1) An establishment must review its standard operating procedures every two years and again after any amendment to these Regulations.

### Supplementary review

(2) An establishment that receives a summary of a final report of an error, accident or adverse reaction investigation or the report of an audit either of which reveals a deficiency in a standard operating procedure must review that procedure.

SOPs must be reviewed and/or revised every two years and after any amendment to the CTO Regulations, at a pre-determined period, by a knowledgeable person(s). An establishment must follow its established SOP review schedule. All revisions must be approved by the medical director, the scientific director or their respective designate. The reason for any revision must be documented.

All SOPs must be retained for reference and inspection for 10 years after they are superseded by a new version, as set out under subsection 62(4) of the CTO Regulations.

### Records of compliance

**75.** An establishment must keep records that demonstrate that it has implemented its standard operating procedures.

Records must indicate when an SOP is implemented. Personnel affected by a new or revised SOP must be trained on the new or revised SOP. Training records must include the signature of the employee and the date on which this training was conducted. This training must take place prior to the implementation of the SOP. If technical training or competency testing is required, training records must also reflect this information.
Audits

76. An establishment must conduct an audit every two years of the activities that it carries out to verify that those activities comply with these Regulations and with its standard operating procedures, by a person who does not have direct responsibility for the activities being audited.

Audits are required to ensure that all regulated activities are performed according to the CTO Regulations and the establishment’s SOPs. Audits must be comprehensive and performed according to an established program. All the activities that need to be audited must be reviewed at a minimum on a two-year basis. An SOP should be written for such audit activities. The findings from audits and follow-up actions required must be documented and reviewed by the management. Follow-up actions / corrective actions should be implemented in a timely manner.

Audits should be performed by personnel who are responsible for carrying out the QA system requirements. Personnel conducting audits must be knowledgeable in the subject matter and the process being audited. The management of the establishment must define the responsibilities and authority of the audit. In addition, personnel auditing an activity must not be directly responsible for that activity. For example, a supervisor responsible for donor screening must not audit any donor screening activities done in its own facility.

Any establishment that contracts another establishment to perform any regulated activity on its behalf is responsible for verifying, on a two-year basis, that those activities comply with the CTO Regulations and their SOPs. The establishment must demonstrate that the contractee (other entity) is in compliance with the CTO Regulations and with its established SOPs. For example, the establishment can assess a contractee’s (other entity’s) compliance by performing an audit on the contractee (other entity) or by reviewing audit reports that are provided by the contractee (other entity).

2.15 Powers of Inspectors (Section 77 of the CTO Regulations)

77. An inspector may, in the administration of these Regulations, take photographs of any of the following:

(a) any article that is referred to in subsection 23(2) of the Act;
(b) any place where the inspector believes on reasonable grounds that any article referred to in paragraph (a) is processed; and
(c) anything that the inspector believes on reasonable grounds is used or is capable of being used in the processing of any article referred to in paragraph (a).
An inspector is a person designated under section 22(1) of the F&DA for the purpose of enforcement of the *Food and Drugs Act and Regulations*. The intent of this section is that, once designated by the Minister, an inspector will carry out his/her responsibilities in accordance with the guiding principles of transparency and fairness, as described in Policy 001. Inspectors’ regulatory powers are described under section 23 of the F&DA.

The inspector may review documents and records that may contain personal medical information. These documents will be reviewed for the purpose of verifying compliance to the CTO Regulations. No personal medical information will be recorded in an inspector’s notebook, and all personal information will be obliterated from any documents that are copied for the purpose of the inspection. It should be noted that Health Canada handles all verified information in accordance with applicable laws on Privacy, Confidentiality and Access to Information.

### 2.16 Transitional Provisions (Section 78 of the CTO Regulations)

<table>
<thead>
<tr>
<th>Processed within 5 years before registration</th>
</tr>
</thead>
<tbody>
<tr>
<td>78. (1) Subject to subsection (2), the following establishments may import, distribute or transplant, as the case may be, cells and tissues that were processed within five years before the day on which these Regulations are registered:</td>
</tr>
<tr>
<td>(a) a registered establishment; and</td>
</tr>
<tr>
<td>(b) a transplant establishment that does not distribute cells or tissues.</td>
</tr>
</tbody>
</table>

Prohibition

(2) An establishment may not import, distribute or transplant, as the case may be, cells or tissues under subsection (1) unless the requirements of subsection 56(2) and section 57 are met.

Health Canada will continue to exercise its general statutory authority under sections 8, 11 and 19 of the F&DA to prevent the distribution of products that were manufactured, prepared, preserved, packaged or stored under conditions or circumstances that render them potentially injurious to health under normal conditions of use or for products that have been unadulterated. This general statutory authority applies to cells and tissues processed before and after these Regulations come into force.

In the context of these Transitional Provisions, the statement “cells or tissues that were processed within five years before the day on which these Regulations are registered” refer to cells and tissues that were declared safe for transplantation between June 7, 2002 and June 6, 2007. All establishments must ensure that every cell and tissue they receive after December 7, 2007 have been declared safe for transplantation after June 6, 2002.
Evidence showing cells and tissues that have been declared safe for transplantation between June 6, 2007 and December 6, 2007 comply either with these CTO Regulations or the Technical Requirements to Address the Safety of Human Cells, Tissues and Organs for Transplantation (Directive), revised in July 2005 will be generally accepted as sufficient to demonstrate compliance with sections 8, 11 and 19 of the F&DA.

Health Canada recognizes that certain cells and tissues, for example umbilical cord blood, have a shelf life that is greater than five years; in these circumstances, the exceptional distribution provisions may be applied.

All registered establishments that distribute or import cells and tissues that were processed within five years before these Regulations came into force must ensure that the donor identification code is a component of their record system.

A CTO transplant establishment that does not distribute may transplant cells and tissues that were processed within five years before the day on which the CTO Regulations were registered only if a donor identification code has been assigned and recorded by the establishment. The establishment must also have documentation of the source of the cells and tissues as well as of the transplant recipient. Therefore, a transplant establishment that has cells and tissues stored in its own inventory can use them even if the establishment that they purchased it from is not currently registered with Health Canada. However, as of December 7, 2007, a transplant establishment cannot import or further distribute cells or tissues unless the establishment that processed them is registered with Health Canada.

For all cells and tissues that are distributed or imported, all establishments must have records that contain information about the establishment from which CTO are received and establishments to which CTO are distributed. In addition to the name of each establishment, records should include the following information:

- the identity of each CTO received or distributed;
- the establishment address;
- the establishment phone and fax numbers;
- contact information in case of an emergency;
- an emergency phone number; and
- the establishment registration number, if applicable.

### 2.17 Coming into Force (Section 79 of the CTO Regulations)
Six months after registration

79. (1) These Regulations, except subsection 26(1), come into force six months after the day on which they are registered.

Exception

(2) Subsection 26(1) comes into force one year after the day on which these Regulations are registered.

Transitional provision

(3) Section 78 ceases to be in force five years after the day on which these Regulations are registered.
3. Appendices

3.1 Appendix 1: Decision Tree for Help in the Classification of CTO

- Is the product for autologous use?
  - If no, Autologous use NOT CTO REGS
  - If yes, Does the product perform the same basic function after transplantation?
    - If no, Not homologous use NOT CTO REGS
    - If yes, Is the product a structural tissue?
      - If no, Is the product non-structural tissue or cells?
        - If no, Is the product an organ?
          - If yes, IT IS CTO REGS
          - If no, What is the intended use of the product, as stated by the manufacturer?
            - If yes, What are the biological characteristics of the tissue that are relevant to this claim?
              - If yes, Does the processing alter these relevant biological characteristics?
                - If no, Not minimally manipulated NOT CTO REGS
                - If yes, Systemic effect dependant on metabolic activity NOT CTO REGS
              - If no, Does the product have a systemic effect and depend on their metabolic activity for its primary function?
                - If no, It is CTO REGS
                - If yes, It is CTO REGS
            - If no, What are the original characteristics of the tissue that are relevant to this claim?
              - If yes, Does the processing alter these relevant original characteristics?
                - If no, Not minimally manipulated NOT CTO REGS
                - If yes, Systemic effect dependant on metabolic activity NOT CTO REGS
              - If no, Does the product have a systemic effect and depend on their metabolic activity for its primary function?
                - If no, It is CTO REGS
                - If yes, It is CTO REGS
3.2 Appendix 2: Appropriate and effective tests for infectious disease testing

These tables are included for reference purposes only; for complete information concerning tests to be performed to assess the suitability of CTO donors, including time frames, please refer to section 2.6 of this guidance document.

**Tissue Donors, except ocular tissues**

<table>
<thead>
<tr>
<th>Appropriate and effective infectious disease markers</th>
<th>Mandatory</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>anti-HIV 1</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HIV 2</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>HBsAg</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HBc IgG</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HBc IgM</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HCV</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HTLV-I</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>anti-HTLV-II</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>syphilis</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>HIV using NAT</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>HCV using NAT</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>WNV using NAT</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

* Mandatory for donors of leukocyte-rich tissue and recommended for donors of tissues that are not considered to be leukocyte-rich.

**Ocular tissues donors**

<table>
<thead>
<tr>
<th>Appropriate and effective infectious disease markers</th>
<th>Mandatory</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>anti-HIV 1</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HIV 2</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>HBsAg</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HBc IgG</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
### Organ or islet cells donors

<table>
<thead>
<tr>
<th>Appropriate and effective infectious disease markers</th>
<th>Mandatory</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>anti-HIV 1</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HIV 2</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>HBsAg</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HBc IgG</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HBc IgM</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HCV</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HTLV-I</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HTLV-II</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>toxoplasmosis</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>syphilis</td>
<td>X**</td>
<td></td>
</tr>
<tr>
<td>HIV using NAT</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>HCV using NAT</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

*Although anti-HTLV-I, anti-HTLV-II and syphilis testing are not required for ocular tissue donors, ocular tissues shall not be considered eligible for transplantation if the donor is tested and found positive for these disease agents or markers during a workup for the donation of organs or other tissues.*
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>anti-CMV IgG</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>anti-CMV IgM</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Epstein-Barr Virus</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>WNV using NAT</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

*For heart donors

**In cases where the organs are not stored in a culture media at 4°C for more than 24 hours.

### Lymphohematopoietic cells donors

<table>
<thead>
<tr>
<th>Appropriate and effective infectious disease markers</th>
<th>Mandatory</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>anti-HIV 1</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HIV 2</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>HBsAg</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HBc IgG</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HBc IgM</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HCV</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HTLV-I</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-HTLV-II</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-CMV IgG</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>anti-CMV IgM</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>syphilis</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>HIV using NAT</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>HCV using NAT</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>WNV using NAT</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
3.3 Appendix 3: HPFI Operational Centres responsible for Canadian provinces, US states and other countries regarding error and accident investigation and reporting

The Canadian provinces, the US states and the countries in the rest of the world have been divided into specific areas which are the responsibility of one of the five Operational Centres. The following is a list of each Operational Centre with their respective areas of responsibility.

**Atlantic Operational Centre**

a) Canadian provinces:
   New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island

b) United States:
   Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, Rhode Island, Vermont

c) Middle East:
   Bahrain, Cyprus, Iran, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, West Bank and Gaza Strip, Yemen

**Quebec Operational Centre**

a) Canadian provinces:
   Quebec

b) United States:
   District of Columbia, Florida, Georgia, New York, North Carolina, Pennsylvania, South Carolina, Virginia, West Virginia

c) Caribbean:
   Antigua & Barbuda, Bahamas, Barbados, Bermuda, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Netherlands Antilles, Saint Christopher and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad & Tobago

d) Central America:
   Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama

e) Scandinavia and Baltic States:
   Denmark, Estonia, Finland, Latvia, Lithuania, Norway, Sweden

f) Central Europe:
   Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Netherlands, Switzerland

**Ontario Operational Centre**

a) Canadian provinces:
   Ontario, Nunavut Territory

b) United States:
   Alabama, Illinois, Indiana, Kentucky, Michigan, Mississippi, Ohio, Tennessee, Wisconsin

c) Northern Europe:
Iceland, Ireland, United Kingdom (England, Scotland, Wales, Northern Ireland)

d) Eastern Europe:
Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Serbia, Slovak Republic, Slovenia

e) Southern Europe:
Greece, Holy See, Italy, Malta, Monaco, Portugal, San Marino, Spain

f) South America:
Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela

**Manitoba and Saskatchewan Operational Centre**

a) Canadian provinces:
Manitoba, Saskatchewan

b) United States:
Arkansas, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, Texas

c) Northern Africa:
Algeria, Chad, Djibouti, Egypt, Eritrea, Ethiopia, Libya, Mali, Mauritania, Morocco, Niger, Sudan, Tunisia

d) Central Africa:
Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Cote d’Ivoire, Democratic Republic of the Congo, Gabon, Gambia, Ghana, Kenya, Liberia, Nigeria, Rwanda, Sao Tome & Principe, Senegal, Seychelles, Sierra Leone, Somalia, Tanzania, Togo, Uganda

e) Southern Africa:
Angola, Botswana, Comoros, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe

f) Mexico

**Western Operational Centre**

a) Canadian provinces:
Alberta, British Columbia, Northwest Territories, Yukon Territory

b) United States:
Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

c) Central Asia:
Afghanistan, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Mongolia, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

d) South-east Asia:
Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Hong Kong RAS, India, Indonesia, Japan, Korea Republic, Laos, Macao, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Vietnam
e) Australia and the Pacific Islands:
   Australia, Fiji, New Zealand, Papua New Guinea, Solomon Islands