



Blood Sweat and Tears: Canadian Military Medicine chronicles the development Royal Canadian Medical Service, from its first real test after Confederation in 1885 (during the North West Rebellion), through moments of wartime, humanitarian work, and recently, the Covid 19 pandemic.

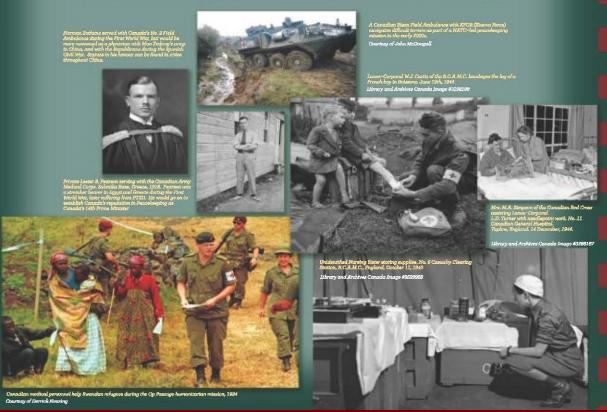
It is a compilation of what some may expect of the typical role of a skilled doctor and nurse, yet it displays the unnegotiated paralleled heroism in a wide range of roles that military medical staff carry out. Some of their fascinating individual stories are presented.

Surgeons, anesthesiologists, pharmacists and research scientists have worked to improve their methods and technology. Canadian veterinarians made very important advances during the First World War. Physiotherapists have helped in convalescence, and pioneering counsellors and psychologists developed therapies that take place in support of mental health. The medical branch historically not only has provided lifesaving help to Canadian

service personnel, but also global humanitarian aid.

The Military Museums is also proud to support many artists in this exhibit, some of whom are veterans, born out of a necessity for healing from trauma which tells of their story of resilience of the human spirit to survive. Medical personnel have also displayed remarkable heroism, with eight of them being awarded the Victoria Cross – we are honoured to display three of these medals later in this exhibit.

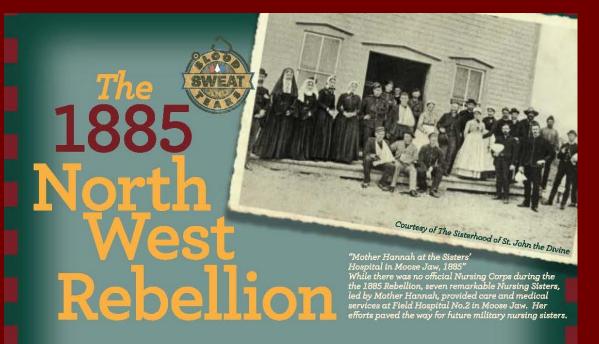
Private and institutional lenders across the country have made this exhibit possible, and we are grateful to all of them.











In early 1885, the Metis and their Indigenous allies rose up in violent protest against the settlement of the west. In response, the Dominion of Canada mobilized the Canadian Militia and its corresponding medical service. For five long months, a series of battles were fought in what is now Saskatchewan and Alberta, leaving hundreds dead and wounded before resistors were defeated by federal troops.

For the wounded, a soldier's best chance of survival depended on early access to medical treatment. Stretcher bearers were sent to the front lines to carry the wounded and dying to hospital tents, and eventually further back to one of two Field Hospitals, stationed in Moose Jaw and Saskatoon. There, surgeons removed bullets and bone fragments, drained abscesses, and monitored access to clean water, dry clothing, and ventilation to

prevent infection and illness. They also treated typhoid, pneumonia, exhaustion, fever, and other ailments.

The recently established 1864 Geneva Convention, which declared all medical personnel as neutral under the Red Cross flag, also started having an impact in Canada during the conflict. The first Red Cross flag was flown in Canada by the Winnipeg Field Battalion during the Battle of Fish Creek as they cleared battlefield casualties.

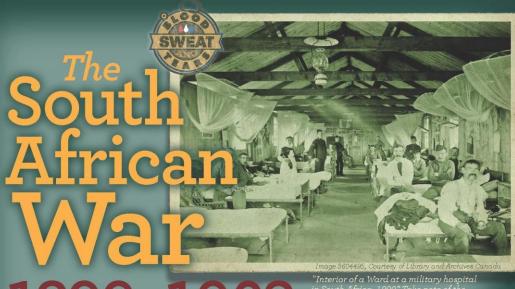
Following the Rebellion, a medical report suggested that surgeons needed more specialized military medical training and that soldiers would benefit from the care of a Nursing Corps, due, in part, to the excellent work of Mother Hannah and her nursing sisters in Moose Jaw. These suggestions would be taken into consideration in future battles.



"The General and his Wounded Aides, 1885"
Take notice of the two wounded soldiers sitting in front of a
hospital tent under a large pile of robes and blankets. Warm,
dry clothing and bedding was a surgeon's best defense
against fever and infection.



ge 3228127, Courtesy of Library and Archives Canada.



1899-1902

"Interior of a Ward at a military hospita, in South Africa, 1900" Take note of the mosquito netting above each cot, an attempt to prevent insect borne disease,

The South African War (commonly known as the Boer War) marked Canada's first experience in sending troops overseas. As the Boers of South Africa fought against British rule between 1899-1902, Canada sent over 7000 troops to aid British efforts.



"Miss Minnie Affleck, Nursing Sister, 1st Canadian Contingent, So. African, 1899-1902 War." At 25 years old, Minnie Affleck was one of the first four nurses to volunteer to accompany Canada's first contingent during the war.

Canadian
Medical
Officers were
faced with a
difficult battle
against
disease. Even
before landing
on foreign soil,
many
volunteers

diphtheria on ships and arrived in a weakened state. The hot climate, insects, and poor access to sanitation acted as a breeding ground for further disease, and, of the 270 men that died in service, half succumbed from illness.

No.10 Field Hospital was set up by the Canadian Medical Unit with the capacity to care for 100 patients while they recovered or became stable enough to transport to a base hospital 80 miles away. There, they were met by one of eight Canadian Nursing Sisters

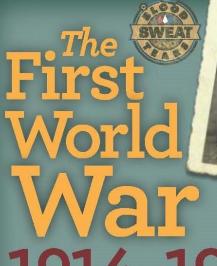
serving under the newly established Nursing Corps. These nurses were the first Canadian women to serve their country in military uniform. They received rank, pay, and allowances equivalent to a Lieutenant, and their success and bravery in South Africa set the groundwork for the Nursing Corps in future wars.

Following the regrettable loss of so mavy men to disease in the Boer War, it was clear that a well-organized, resourced, and highly trained Medical Corps was necessary for the health of Canada's soldiers, and, in 1904, the Canadian Army Medical Corps

(CAMC) was established, followed by a centralized order of Nursing Sisters in



"A Bad Casualty for the Field
Hospital after French's Victory at the
Modder, 1900" This image illustrates
stretcher bearers carefully placing a
wounded soldier in the back of an
ambulance-wagon.
Image 3194442, Courtey of Library and Andrives Canada





1914-1918

In 1914, Canada entered the First World War alongside Britain, France, Belgium, Serbia and Russia, in opposition to Germany and Austria-Hungary. Soon, other countries had taken sides and war consumed

Soon, other countries had taken sides and war consumed most of Europe until the Armistice on 11 November, 1918. By the end of the war, more than 21,000 Canadian men and women served in the Canadian Army Medical Corps (CAMC), operating 16 general hospitals, 11 stationary hospitals, 4 casualty clearing stations, and 8 "specialty hospitals" for more specific treatments. The Nursing Corps expanded substantially during the Great War, with over 2,800 nurses serving on all fronts. These personnel were responsible for treating over 138,000 Canadian wounded during the war.

The number and severity of battlefield wounds required the CAMC to streamline its evacuation strategies, surgeries, and medical knowledge. New progress in battlefield medicine included the use of blood transfusions to treat shock and blood loss, magnets to remove small pieces of shrapnel, and the loose wrapping of wounds to increase air flow and prevent infection. Field Ambulance services and triage stations were further developed, transporting soldiers to where they could receive medical care as quickly as possible. Trench warfare created a breeding ground for diseases like typhoid, tetanus, and tuberculosis, so disease prevention was taken seriously by the CAMC. Men received vaccinations, water test kits were distributed, and human waste was separated from living areas. These, and other small but mighty revelations, increased a soldier's chance of survival by 90 percent and would serve the CAMC well in the next war.





"8th Canadian Field Ambulance Stretcher-Bearers at Passchendaele." Carrying bandages, iodine, and a pair of scissors, stretcher bearers would bring the wounded to a Regimental Aid Post for immediate treatment.



"Hospital Tents - Field Ambulance June, 1916." After evacuation to Field Ambulance units close to the front line, wounded soldiers would then be sent to Casualty Clearing Stations for emergency treatment and rest.

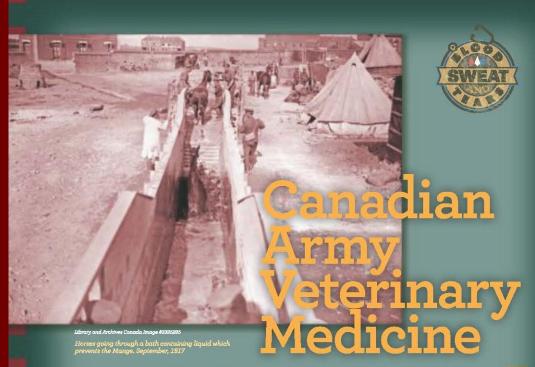
8th Conadian Field Ambulance Photograph Album CU19982877, Courtesy of University of Calcary Digital Archives.



"Wounded Plodding Across
Country." German prisoners were
often conscripted to help the
wounded back to aid stations, as in
the case of this Canadian soldier
flanked by two Germans.







Few people recognize the significant contribution of horses and mules in maintaining the Canadian Army Corps during The First World War. The Canadian Army Corps consisted of 60,000 soldiers - and 24,000 horses and mules.

These animals provided the lifeline and mobility to the soldiers at the front. The Canadian Army Veterinary Corps (CAVC), a relatively small force of men, performed an epic effort in caring for and healing the animals in their custody. The CAVC provided treatment of diseased, wounded, exhausted, malnourished, and exposed animals and returned to the front 80% of animals under their care.

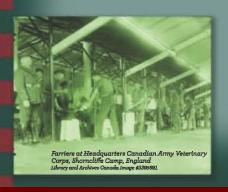
The Corps was well organized, consisting of a Mobile Section that provided immediate aid and an Evacuation Section that would bring seriously wounded horses to a veterinary hospital. The Canadian Veterinary Hospital and Remount Station was at Le Havre France. The hospital housed up to 1,800 horses. Here they would be

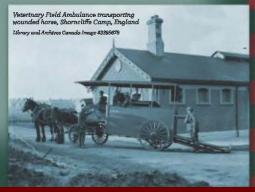
treated for their injuries, diseases and cared for until recovered.

The CAVC made some significant advances in military veterinary medicine over the course of the war, including a new technique of detecting glanders (a fatal respiratory infection) and the treatment of mange (a skin mite parasite). Lieutenant Frank Perry, a Veterinary surgeon with the North West Mounted Police and a veteran of the South African War developed mange treatments of calcium sulfide solution applied through dipping trenches that brought many horses back to health.

During the war, the CAVC and The Royal Veterinary Corps cared for approximately 500,000 horses and mules.



















1939-19

When Germany invaded Poland in 1939, it sparked another World War that lasted until 1945. Having received the prefix "Royal" at the end of the last war, the Royal Canadian Army Medical Corps (RCAMC) entered the fray determined to improve upon lessons learned in the Great War.

However, when over 900 Canadian lives were lost during the Battle of Dieppe, the RCAMC realized that their old systems of trench warfare support were no longer suitable. In response, mobile Advanced Surgical Centres were created to carried large volumes of refrigerated blood, plasma, and surgical supplies into combat zones, granting soldiers access to surgery faster than ever before.

Medics became experienced in battlefield medicine, often treating wounds inflicted by mortar shells, machine guns, and artillery during the thick of battle. Access to plasma reduced shock, morphine dulled the pain, sulphanilamide slowed the rate of bacteria growth in wounds, and, when penicillin

appeared in large quantities in 1944, any fears of lingering infection evaporated. Soldiers who needed continued care were sent to hospitals further back in France, England, or North Africa. Over 53,000 wounded survived to return to Canada.

Nursing services expanded to include the Navy and Air Force and each branch had its own distinct uniform. 3,656 Nursing Sisters served with the RCAMC during the Second World War, and first saw action in Sicily, working at the No.1 Canadian General Hospital. Others were deployed to Algeria, Italy, and France. In the post-war years, many of these women served at military and veteran hospitals across Canada.

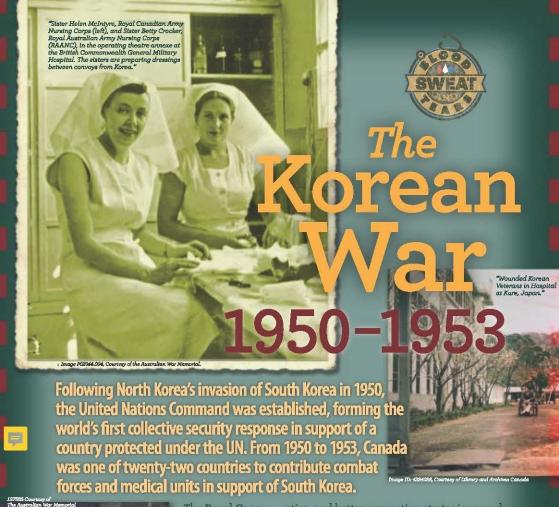


Japanese Second World War

This kit was stolen from the camp dispensary at Niigata Prisoner of War Camp in Japan by Dr. Kenneth Cambon. Cambon had been taken prisoner at Hong Kong in 1941. He could have been severely punished — or even executed — if the Japanese had found out, but he risked it so that he could help provide medical care to his fellow prisoners. The Japanese provided little or no medical care or equipment to their prisoners, and camp conditions were terrible. Malnutrition was standard, which led to many types of diseases, and the prisoners worked in dangerous conditions in coal mines and shipyards, leading to physical injuries. This kit likely saved many lives. After the war, Cambon continued using his skills in the department of surgery at the University of British Columbia. He wrote his memoirs, entitled "Guest of Hirohito".

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"Major'ni, Korea. 1953-05-28. Canadian stretcher bearers attend to 1/2795 Private R. J. Frazer, C Company 2nd Battalion, The Royal Australian Regiment (2NAR), who was wounded by enemy mort on Feature 15.9."

The Royal Canadian Army Medical Corps
(RCAMC), working collaboratively with Commonwealth medical personnel, deployed the 25th Field Ambulance and the 25th Field Dressing Station to treat UN troops on the front lines. If soldiers needed

further treatment, they were evacuated to Mobile Army Surgical Hospitals (MASH) staffed by UN medical teams. British Commonwealth General Hospitals were built in Kure, Japan and Seoul, Korea to provide longer-term aid. RCAMC personnel staffed and operated a 100 bed unit at each location. Medical advancements in anesthesia, resuscitation, and intra-articular blood transfusions, access to more varied antibi-

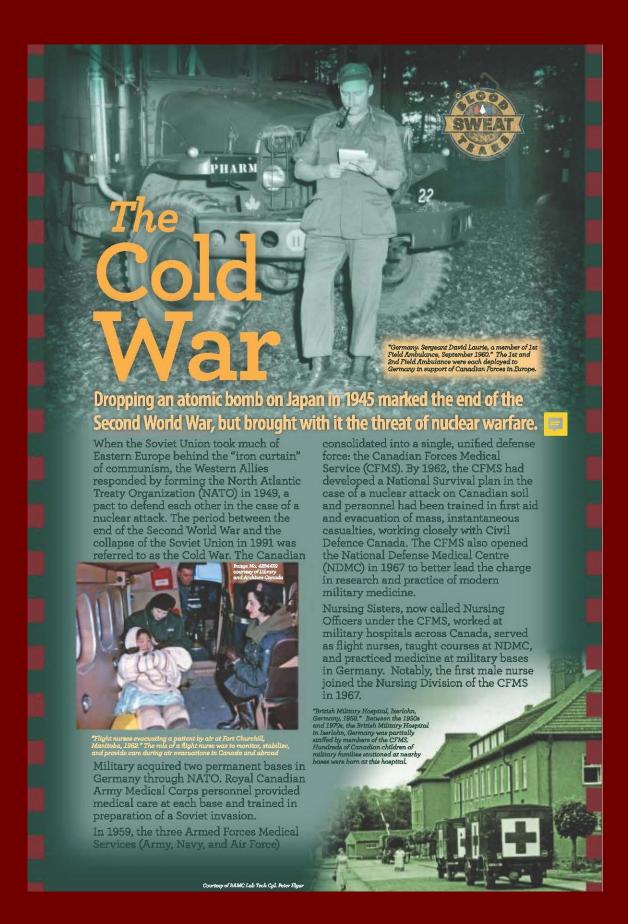
otics, and better evacuation strategies saved the lives of over 1500 Canadian wounded, as well as other Commonwealth soldiers. The helicopter also became an iconic symbol of medical evacuation in the Korean War, transporting men out of rugged, isolated regions faster than ever before.

Over the course of the war, 60 RCAMC Nursing Sisters provided care at the Commonwealth hospitals in Kure and Seoul, and in 1953, were sent to the 25th Canadian Field Dressing Station in Tokchong, Korea which had been staffed only by men until that point. After

that point. After the war, this station was turned into a general hospital and many Nursing Sisters remained working there until late in 1954.

"Colonel McNally, Royal Canadian Army Medical Corps, anaesthetist, Major Darby, Royal Canadian Army Medical Corps,

Crocker, Royal Australian Nursing Corps, senior theatre sister, and Captain Webster, Royal Army Medical Corps (Britain), at work on a patient in the operating theatre at the British Commonwealth Hospital*



Afghanistan 2001-2014

When Al Qaeda terrorists attacked the World Trade Centre on 9/11, 2001, NATO's response was immediate. Canada joined 40 other countries in a collective mission to remove Al Qaeda and their Taliban backers from Afghanistan, and bring democracy to the country.

Under the collective International Security Assistance Force (ISAF), there were four levels of military medical care, ranging from Role 1 (primary care on the battlefield) to Role 4 (comprehensive care at a base hospital). Between 2006 and 2009, Canada was placed in charge of the Role 3 Multinational Military Unit in Kandahar, Afghanistan. This marked the largest deployment of Canadian medical personnel and supplies since the Korean War. Although Role 3's function was to provide ISAF casualties with emergency surgical and trauma care until they could be evacuated, most of their patients were Afghan nationals, and many of these were children. Role 3 also offered enhanced training for local Afghan medical staff at their facilities.

Mass casualties were common at the Role 3 and the Canadian Forces Medical Service (CFMS) established its first "walking blood bank" to prevent the hospital from running out of blood necessary for transfusions. The Canadian Forces asked their troops to volunteer as donors before deployment, and in Afghanistan as well.

Experience at the Role 3 improved CFMS operations when the Disaster Assistance Response Team (DART) was deployed to set up a hospital after the 2010 earthquake in Haiti and has influenced the way Canadian civilian hospitals respond to disaster preparedness and trauma care.







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Disease



Disease prevention has always been a top priority in the Canadian Military, and Medical personnel rely on the latest science and research to treat new illnesses as they emerge.

In the early days of battlefield medicine, a doctor's best defense against disease was ventilation and cleanliness, but over time, scientific research, pharmaceutical care, personal protective equipment (PPE), and the development of vaccines has drastically lowered the risk of disease in the military.

However, no disease was as irritating to medical officers as sexually transmitted infections (STIs), or Venereal Disease (VD) as it was once called. In the First and Second World War, VD was difficult to treat, and pulled men from the battlefield who were otherwise healthy and needed in combat. In the minds of Medical Officers,

VD was preventable and treatment was a waste of medication, care, and supplies in times of emergency. Frustrated, Military doctors began to dock pay and deny leaves for men who tested positive for VD. The military also distributed disturbing films and propaganda detailing what could happen to a man afflicted by VD. These measures were relaxed when penicillin was discovered as an effective treatment in 1944, and, while VD has never been eliminated, the Military now uses education and prophylactics, rather than punishment and disturbing videos, as their best measure against the spread of sexually transmitted diseases.

A Canadian Women's Army Corps (CWAC) private conducting tests during the Respiratory Disease Control Program at Camp Borden, Ontario, Canada, circa February-March 1944

Image 3334442, Courtesy of Library and Archives Canada.



Image 2851781, Courtesy of Library and Archives Canada

Mathieu Ouellette, a Medical Laboratory Technologist, looks at a blood sample at the Saint-Jean Garrison laboratory in 2022

Image 20220216STN0027D019, Courtesy of MCpl Nédia Coutinho, Canadian Armed Forces.

A propaganda poster warns against the horrors of Venereal Disease in the Second World War. It notes "He picked up more than a girl," and lists the many consequences of contracting VD. The skeleton looming in the background sends a very clear message



AND THE STATE OF T

Private Louis Dufour of The Essex Scottish Regiment standing beside a Venereal Disease warning poster in the Netherlands, 24 January 1945. The poster says "Beware of V.D. Use Precautions." It appears that someone has pinned a pair of men's underwear to the sign

Image 3524606, courtesy of Library and Archives Canada

Post Traumatic[®] Stress Disorder

Some of us have learned how to become "resilient" while others need interventions to learn how to cope with the aftermath or side effects of situations that create post-traumatic stress disorders, as we refer to most commonly today as PTSD.

PTSD was not formally recognized as a mental disorder until the late 20th century (c. 1980). Times of war demonstrate high turnover of persons with PTSD; however, it has not always been understood to be the aftermath of stress and trauma, often referring a diagnosis of "shell shock", "war neurosis", "soldier's heart" and even more sadly, demeaning a soldier's character by labelling one as LMF or "lacking moral fibre". Medical interventions were generally minimized out of the necessity to keep soldiers on the front lines during The First World War, usually a 48-hour period of rest to combat "fatigue".

The onset of understanding PTSD has brought the discussions of mental health in the 21st century a rightful place in the medical arena, in large part, by the plight of many veterans for the right to self-care after

Jason McKenzie and Steve Hartwig, both veterans with PTSD, walked across



serving their countries. Treatments such as counselling, psychiatric evaluation and interventions and proper responsible drug related prescriptive interventions have awarded many people back their lives.

Outside of the medical arena, there have also been many art therapy outlets that have proven to be therapeutic not only to veterans who have served but all PTSD patients, often giving them new life purpose as artists within their communities, helping to keep the mental health conversation alive.

Written by Maggie Witt

Carraclif



Poster combating
homelessness created by
Veterans Affaire Canada.
Homelessness is a real
problem for many veterans
suffering from PTSD

Muccabee, a PTSD service dag, interacting with the public. Service dags are a more recent form of assistance for those suffering from PTSD, helping to diffuse potentially triggering situations.



Convalescing



Improvements in battlefield medicine greatly increased a soldier's chance of survival after being wounded, but many were left with debilitating injuries that prevented them from returning to their previous lives.

By 1915, the Canadian military had established Convalescent Hospitals in the UK and Canada to help veterans regain confidence in their capabilities through physical activity, sports, art, and vocational training. Veterans also learned to use their new false limbs, wheelchairs, or other technical aids. The Department of Soldiers' Civil Re-establishment (DSCR) also created "Vetcraft" shops to employ disabled veterans who were otherwise unable to re-enter the workforce. Vetcraft created some of the first poppies, and made furniture and other handiwork continuing on as Vetcraft Industries Ltd. into the 1990s.

Veterans are now treated at civilian clinics. Occupational Therapy is often used now to restore a veteran's sense of independence through the development and discovery of new skills. Retired Captain Trevor Greene is an example of how veterans can overcome through Occupational Therapy. After a severe head injury in Afghanistan in 2006, an "exoskeleton" helped him to walk independently again for the first time in 2015. Injured veterans are also able participate

in Soldier On – an initiative of the Canadian Armed Forces that promotes mobility through physical activity, sport and other programs. Veterans like Mark Fuchko (who lost both his legs in Afghanistan) have gone on to hike Mt. Kilimanjaro, kayak along the West Coast and play sledge hockey in the Paralympics. Wounded veterans can also compete in the Invictus Games.

A veteran receives aquatic therapy at the No.7 Convalescent Hospital in Niagara Falls, Canada 1945. Working in water is a gentle way to improve strength, range of motion, and balance



Frederick Charles
Butchart originally
enlisted in the 89th
Battalion in Calgary
and later transferred
over to the 10th
Battalion. He is
pictured here sitting in
a wheelchair at a
Convalescent Hospital
in Toronto, 1917



Signalman M. Williams and Seaman J. Curtis work on arts and crafts while Nursing Lt. Merkley watches on, 1957. Art been used as a form of Occupational Therapy since the first Convalescent Hospital opened in 1915 to improve fine motor skills and promote mental health and creativity while the men recuperate

Image: 4951175, Courtesy of Library and Archives Canada



Master Corporal Paul Franklin lost both legs in Alghanistan, and after re-gaining his health co-founded the Northern Alberta Amputee Program and the Franklin Foundation. Here he is, rolling through a leg of the Soldier On Alghanistan Relay near Kingston, Ontario, May 6, 2014

Image IS2014-1002-11, Courtesy of Sgt Matthew McGregor, Canadian Forces Combat Camera