10:30am – 12:00pm

Fake news, fake therapies: Upping the ante in the fight against unproven stem cell therapies in Canada

Panel Organizer: Lisa Willemse
Stem Cell Network

Proving Treatments:
The Role of Clinical Research

Dr. Harold Atkins

"Fake news, Fake Therapy: Upping the Ante in the Fight Against Unproven Stem Cells Therapies in Canada"

Canadian Science Policy Conference, Ottawa
8-November-2018

What is a clinical trial?

- It is **RESEARCH**!
- It involves human subjects,
- It has a defined goal,
- It examines one or more aspects of a health-related intervention,
- It can be ***observational*** or ***interventional,***
- It can be ***retrospective*** or ***prospective,***
- Some are ***regulated,***
- All require participants to provide ***informed consent,***
- All are governed within an ethical and legal framework,

2014

TRI-COUNCIL POLICY STATEMENT

Ethical Conduct for Research Involving Humans

2014

Canadian Institutes of Health Research
Natural Sciences and Engineering Research Council of Canada
Social Sciences and Humanities Research Council of Canada

MSBMT: Targeting Multiple Sclerosis as an autoimmune disease with immunoablative therapy and immunological reconstitution

Start with a hypothesis:

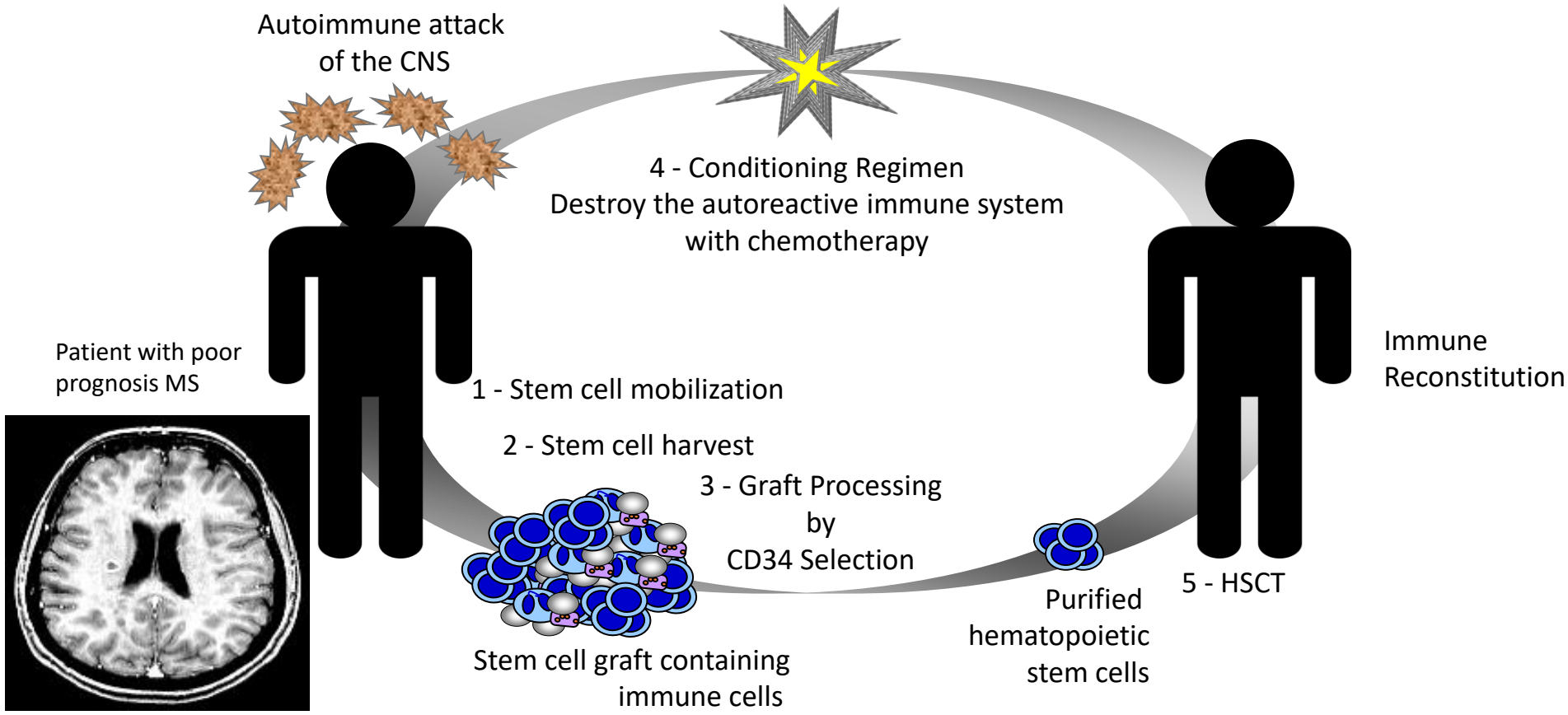
'Multiple sclerosis is an autoimmune disease that can be cured by immuno-ablative therapy'.

Define objectives:

'To establish whether immuno-ablative therapy will induce a long-lasting MS progression free response for patients with active and progressive disease who are predicted to have a poor prognosis'.

Explain and Justify the Rationale for this experiment

MSBMT: Define the study population & the intervention.

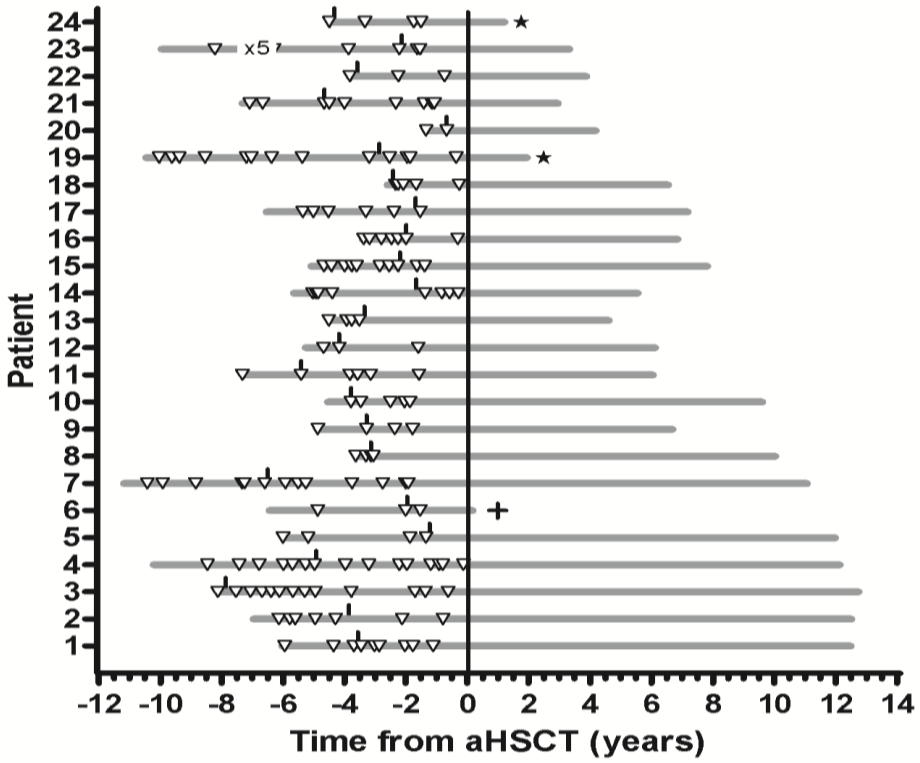


- Build in mechanisms for patient safety and quality of care and data collection,
- Seek Approval by Research Ethics Board,
- Informed consent from each participant,

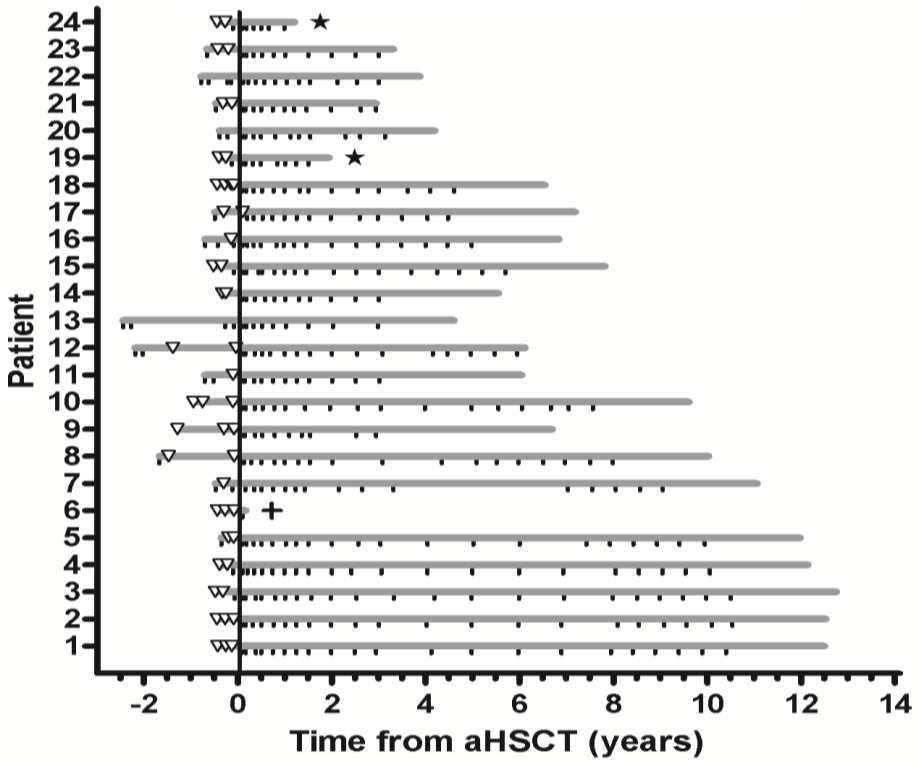
MSBMT: Endpoints, Evaluations and Analysis.

Clinical Relapses, MRI changes, Disability, Survival, QoL, Biochemical endpoints

Clinical Relapses



New or Enhancing Lesions



Disseminate the knowledge.

Immunoablation and autologous haemopoietic stem-cell transplantation for aggressive multiple sclerosis: a multicentre single-group phase 2 trial

Harold L Atkins, Marjorie Bowman, David Allan, Grizel Anstee, Douglas L Arnold, Amit Bar-Or, Isabelle Bence-Bruckler, Paul Birch, Christopher Bredeson, Jacqueline Chen, Dean Fergusson, Mike Halpenny, Linda Hamelin, Lothar Huebsch, Brian Hutton, Pierre Laneuville, Yves Lapierre, Hyunwoo Lee, Lisa Martin, Sheryl McDiarmid, Paul O'Connor, Timothy Ramsay, Mitchell Sabloff, Lisa Walker, Mark S Freedman

Lancet 2016; 388: 576–85

Published Online
June 9, 2016
http://dx.doi.org/10.1016/S0140-6736(16)30169-6

Summary

Background Strong immunosuppression, including chemotherapy and immune-depleting antibodies followed by autologous haemopoietic stem-cell transplantation (aHSCT), has been used to treat patients with multiple sclerosis, improving control of relapsing disease. We addressed whether near-complete immunoablation followed by immune cell depleted aHSCT would result in long-term control of multiple sclerosis.

Evaluate all the evidence (knowledge synthesis)

Systematic Reviews

- Collate all evidence for a specific research question using explicit reproducible methodology
- Assess quality, biases & thus validity of each study

Meta-analysis

- Statistical method to combine results of independent studies to give a more precise estimate of health care effects

https://canada.cochrane.org/

Autologous hematopoietic stem cell transplantation in multiple sclerosis

A meta-analysis

Maria Pia Sormani, PhD
Paolo A. Muraro, MD
Irene Schiavetti, PhD
Alessio Signori, PhD
Alice Laroni, MD
Riccardo Saccardi, MD
Gian Luigi Mancardi, MD

Correspondence to Dr. Sormani: mariapia.sormani@unige.it

ABSTRACT

Objective: To summarize the evide topoietic stem cell transplantation sclerosis (MS).

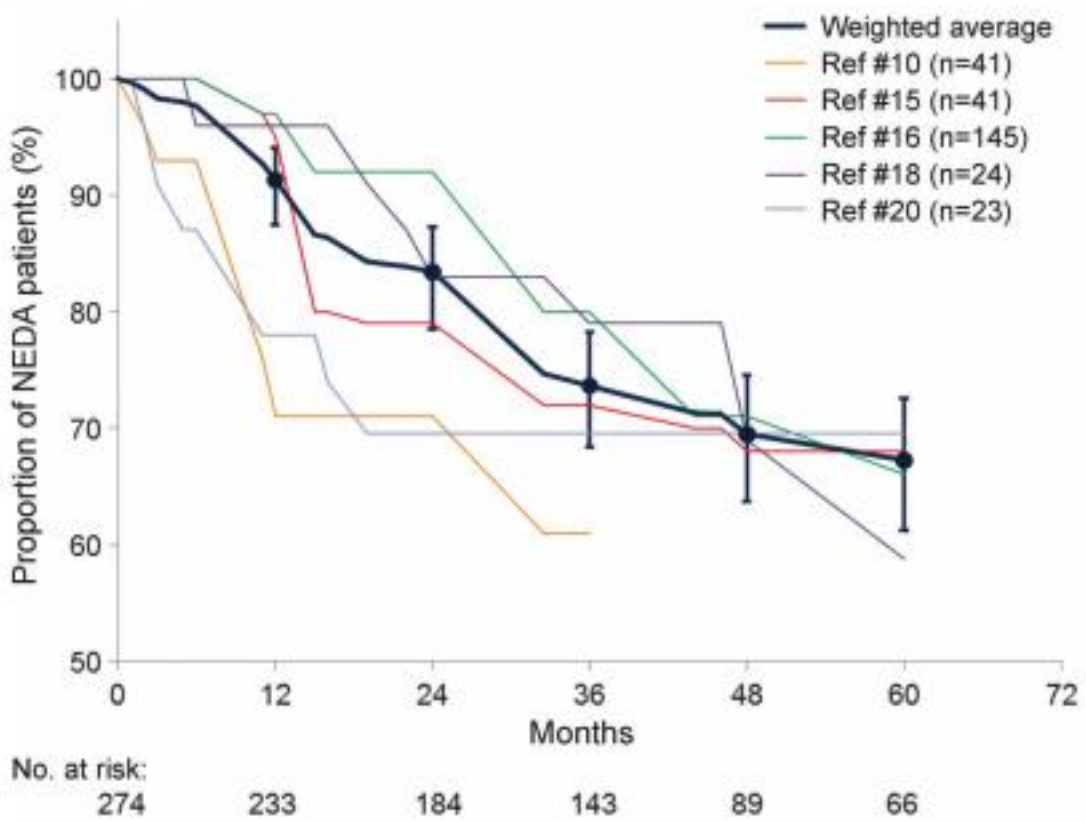
Methods: We collected all the publi carefully excluding reports that we related mortality (TRM), rate of dis status. A weighted metaregressio were study-specific characteristic

Results: Fifteen studies including The pooled estimate of TRM was higher in older studies (p = 0.0 relapsing-remitting MS (RRMS) (p (p = 0.013) was also significantly 17.1% at 2 years (95% CI 9.7 Lower 2-year progression rate wa with RRMS (p = 0.004). The poo 70%–92%) and at 5 years was 6

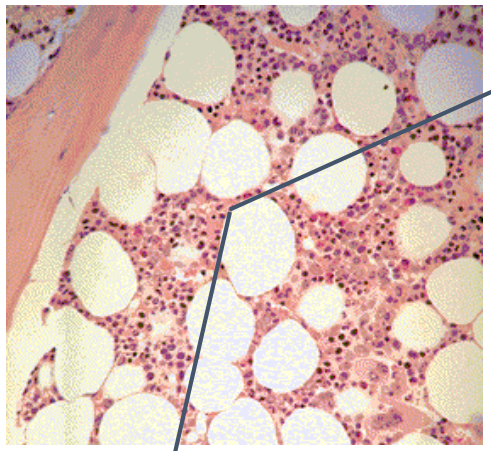
Conclusions: The emerging evidenc benefit/risk profile form this therap with a relapsing-remitting course

Neurology® 2017;88:2115-2122

Figure 4 Proportion of patients with no evidence of disease activity (NEDA) over time in single studies and as a pooled estimate



MSC: A second marrow stem cell!

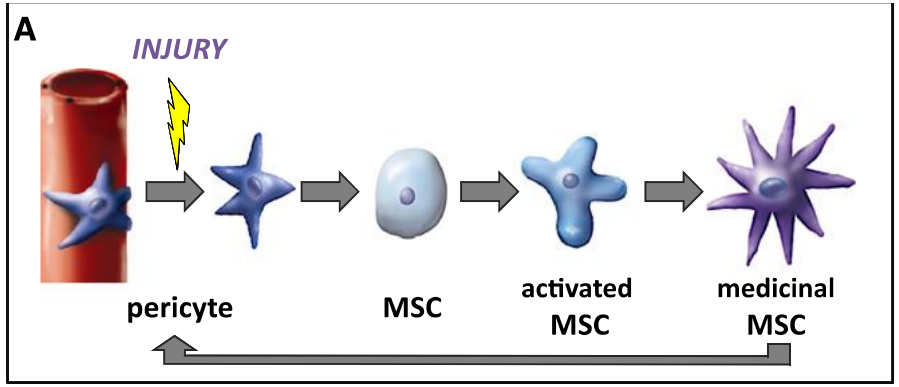


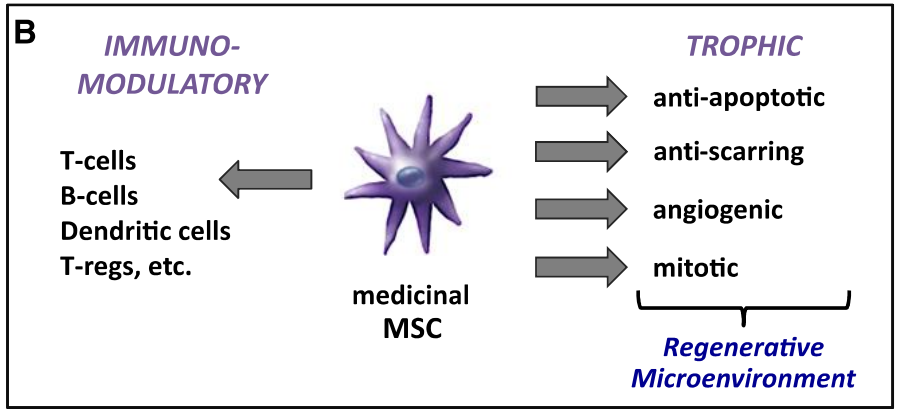
HSC

- Blood Cells
- Immune Cells
- Endothelial Cells

MSC

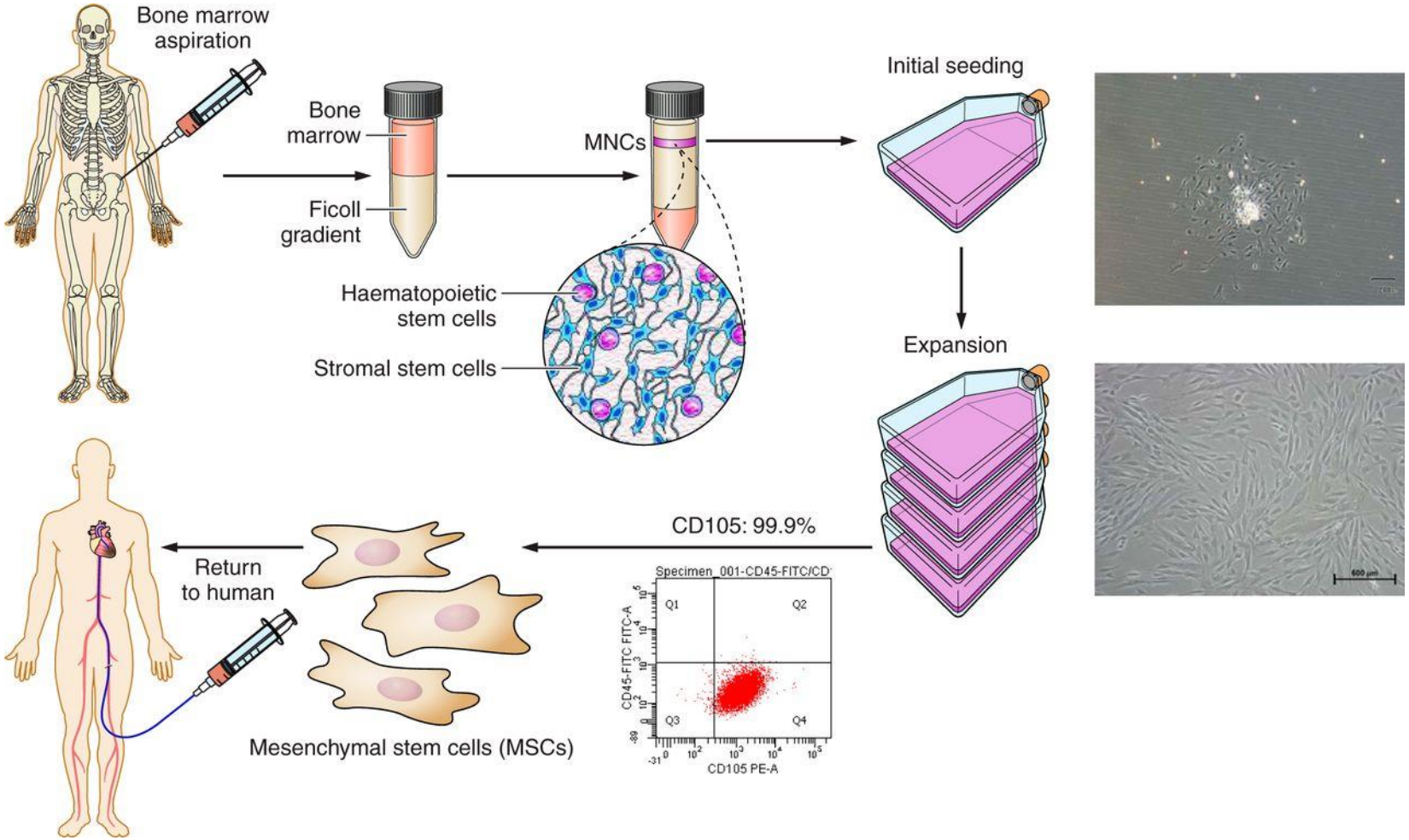
- Tendons
- Fat
- Bone
- Cartilage





Caplan & Correa, Cell Stem Cell 2011 v9 pg 11-15

Process derived Product ≠ Starting Product
Good Manufacturing Practices (GMP)



Samuel Golpanian et al. Physiol Rev 2016;96:1127-1168

Physiological Reviews

Stem Cell Network
Réseau de cellules souches

Our people...our strength

mesems

MESENCHYMAL STEM CELLS FOR MULTIPLE SCLEROSIS

FUNDING BODIES		
Agencies supporting core activities and coordination		
Multiple Sclerosis International Federation (MSIF)	European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS)	Fondazione Italiana Sclerosi Multipla (FISM)
Agencies supporting national studies		
Fondazione Italiana Sclerosi Multipla (FISM)	Fondazione CARIGE- Italy	The Danish Multiple Sclerosis Society - Denmark
UK Multiple Sclerosis Society	UK Stem Cell Foundation	UK Clinical Trials Network
ARSEP Association pour la Recherche sur la Sclérose En Plaques	Vetenskapsrådet, Vetenskapsrådet, Sweden	Theme Center for Regenerative Medicine, Karolinska Institute, Sweden
Neurology Clinic, Karolinska University Hospital, Stockholm	Institute of Health Carlos III (Badalona)	FIMABIS (Andalusian Public Foundation for Health and Biomedicine Research in Malaga)
	Andalusian Initiative for Advanced Therapies - Health and Progress Foundation	

MESEMS: Project stem cells in humans

Multiple Sclerosis Society of Canada

Hot Topics > Stem Cells > **MEsenchymal Stem cell therapy for CAnadian MS patients (MESCAMS)**

13 sites in 8 countries
Italy, Denmark, UK, Sweden,
France, Spain Canada,
Australia

Maritime man living with MS believes stem cells will slow progression

https://atlantic.ctvnews.ca/maritime-man-living-with-ms-believes-stem-cells-will-slow-progression-1.3889243

Stem Cells & Unproven Therapies in Canada

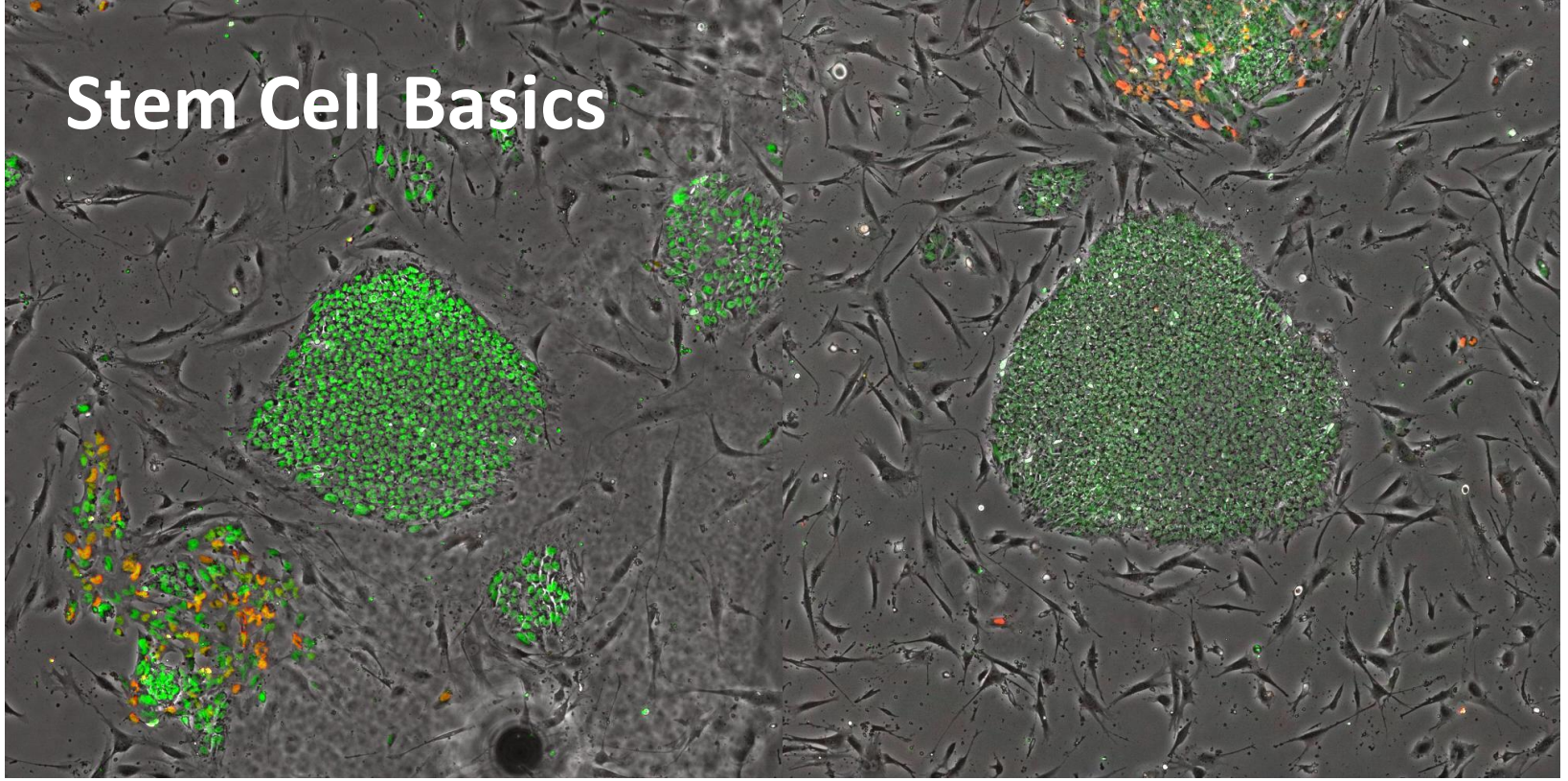
Canadian Science Policy Conference

November 8, 2018

Cate Murray, Executive Director

Stem Cell Network

Stem Cell Basics



- Discovered by 2 Canadians in early 1960s
- Key properties are self-renewal and ability to create more specialized cells needed for growth or repair
- Found in nearly every organ/tissue in the body
- Potential as treatments for chronic disease

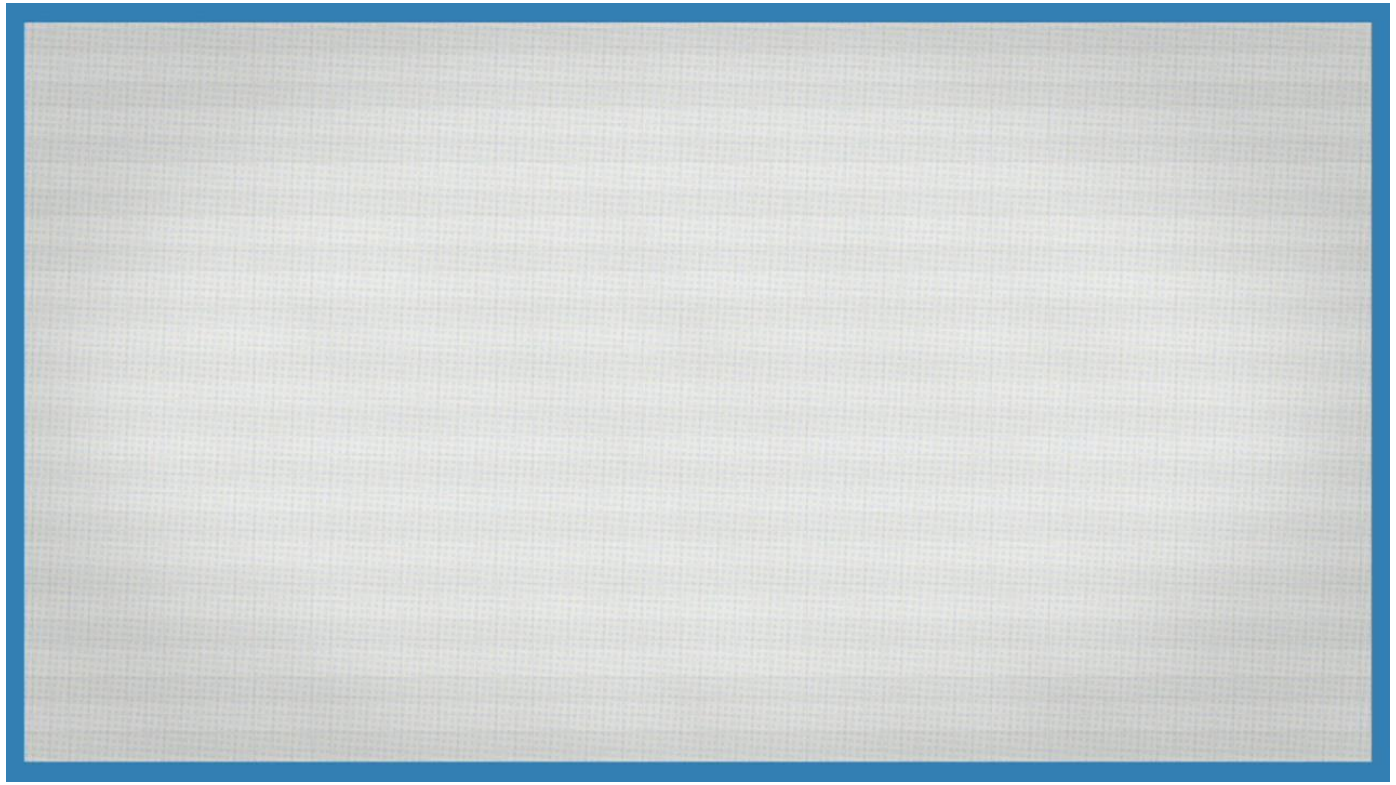
What are Clinical Trials?

- A research study designed to answer specific questions about a new treatment
- Set up in phases:

PHASE	GOAL	# PARTICIPANTS
1	IS IT SAFE?	<20
2	IS IT SAFE TO CONTINUE & DOES IT WORK?	<100
3	DOES IT WORK IN LARGE GROUPS?	>100
CLINICAL APPROVAL		
4	WHAT ARE LONG TERM BENEFITS & RISKS?	Varied populations

- Conducted within the health care system

What are Unproven Stem Cell Therapies?



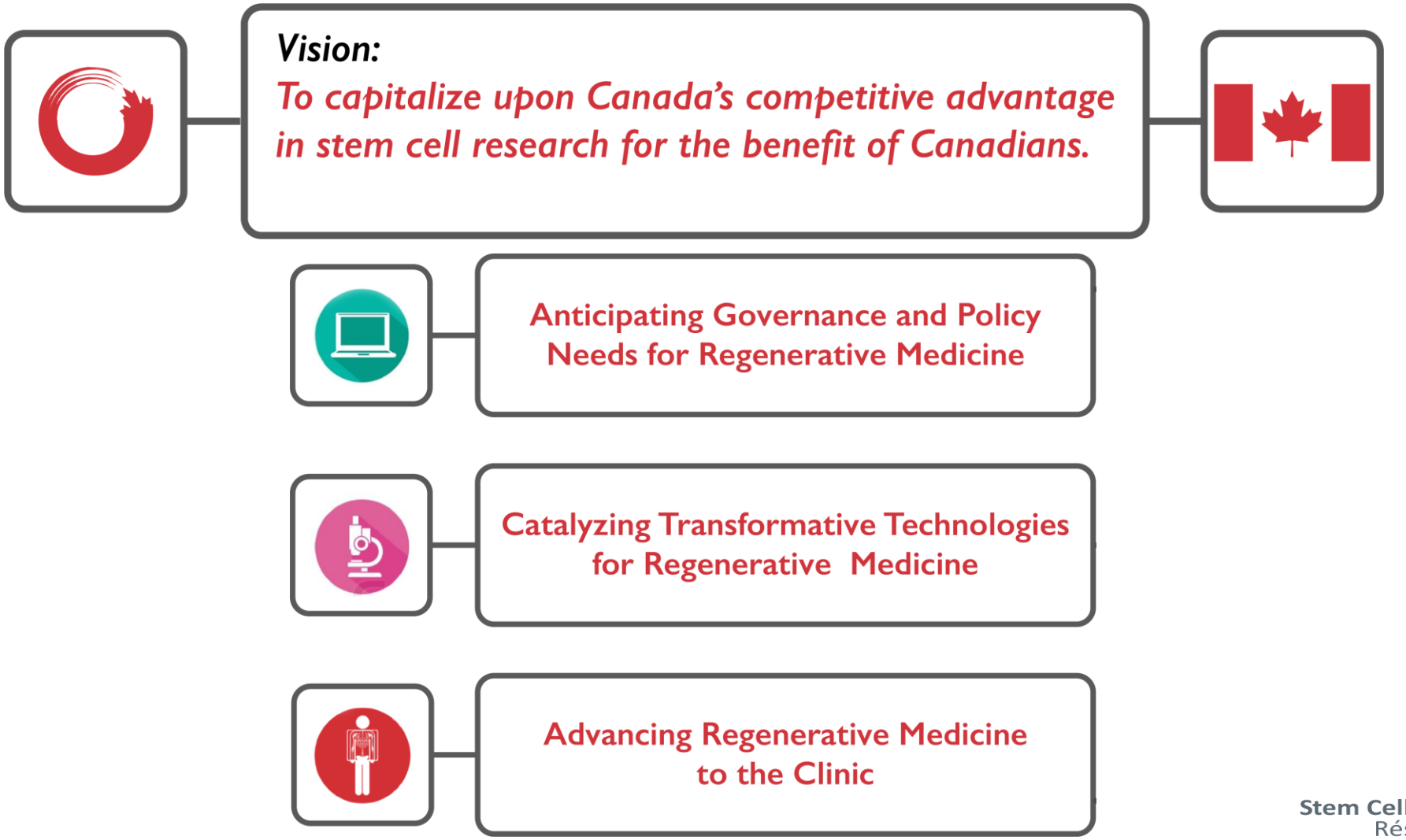
- Not offered through health system, no published record
- Inadequate consent & disclosure of type of cells/procedure
- Patients pay out of pocket for treatment; no follow up
- Not just international: many clinics in Canada

The Fight Against Unproven Stem Cell Therapies

Public personalities who use stem cell treatments lend credibility to unproven therapies.

Most providers in Canada are physicians. They provide mainly adult autologous stem cell transplants.

The Stem Cell Network



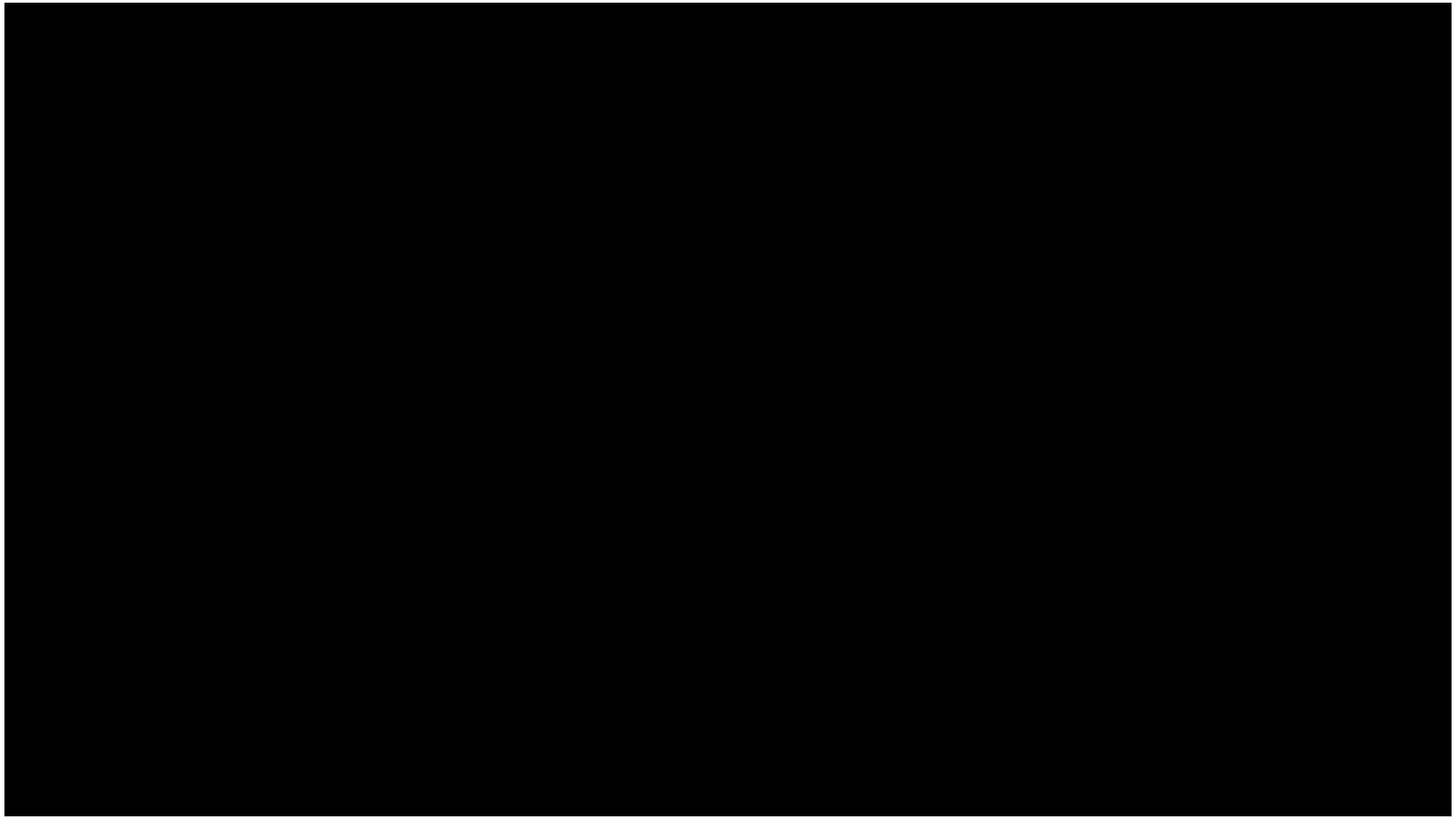
Unproven Therapies: Understanding & Advising

- Facilitating research and providing fact-based information for public, media, patient groups
- Workshops to bring stakeholders together
- Working with international community to make policy recommendations

Stem cell therapies: medical experts call for strict international rules

Experts from 15 countries say regulation needed to prevent vulnerable patients pursuing unproven and potentially deadly treatments

SCN: Bringing Together Canadian Excellence



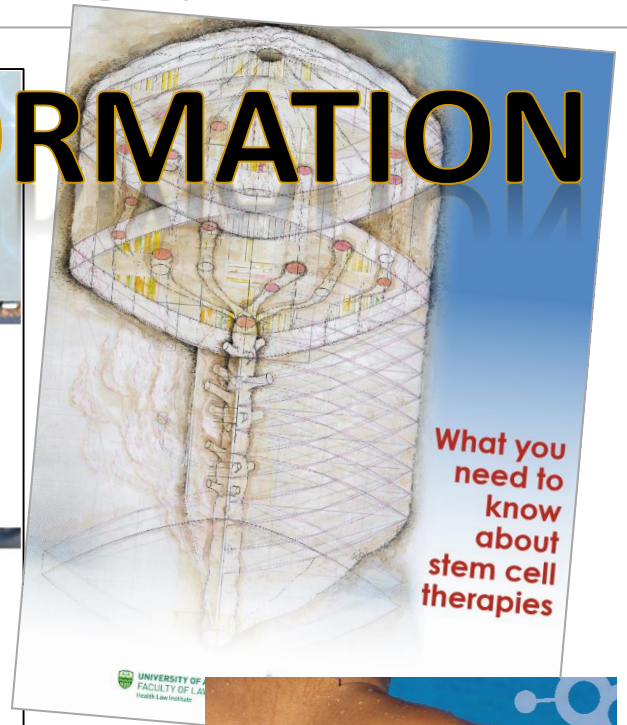
Policy Options – A Balancing Exercise

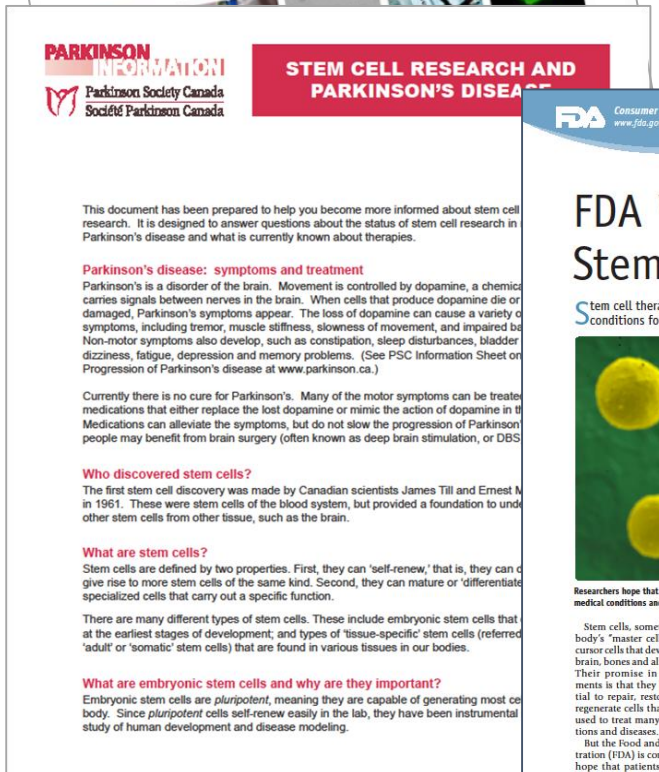
- Information
- Hard Law – Federal Regulation
- Common Law Remedies
- Consumer Protection

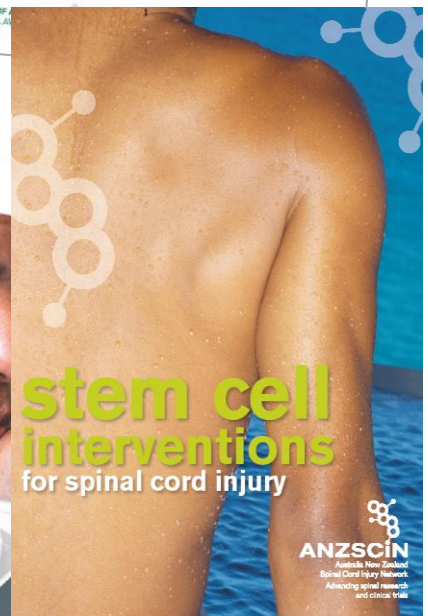
& Truth in Advertising Regulation

- Professional Regulation

THE POWER OF INFORMATION

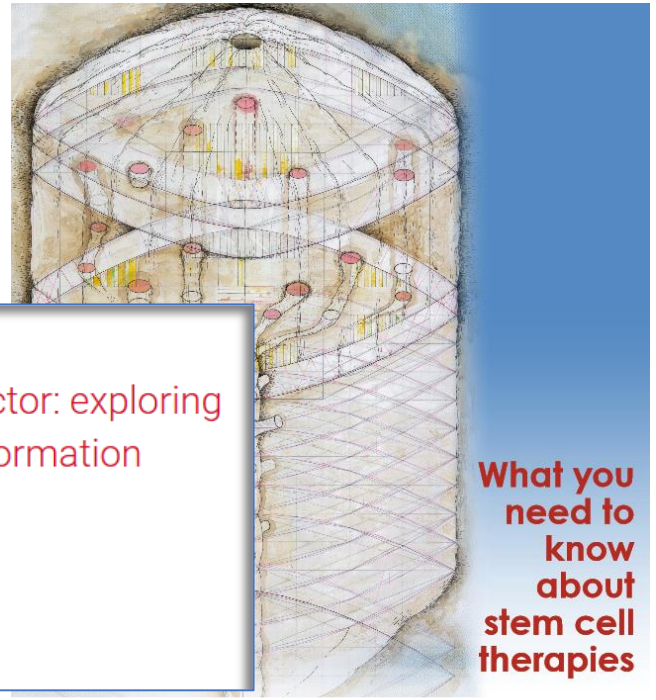






The Potential Power of Social Media (… and its limitations)

tumblr.



REGENERATIVE MEDICINE, VOL. 12, NO. 7 | RESEARCH ARTICLE

Leveraging social media in the stem cell sector: exploring Twitter's potential as a vehicle for public information campaigns

Kathleen McNutt & Amy Zarzeczny

Published Online: 8 Nov 2017 | https://doi.org/10.2217/rme-2017-0055

Organization	Items Tweeted	Mentions	Impressions	Retweets (Reach)	Favourited (Reach)
Org 1	13	13	1503	67	5
Org 2	9	14	271	17	22
Org 3	15	15	10355	78	60
All others	0	6	N/A	7	2

Hard Law – Federal Regulation

Cytotherapy, 2017; 19: 1400–1411

International Society for Cellular Therapy
ISCT

CrossMark

MEETING REPORT

Workshop to address gaps in regulation of minimally manipulated autologous cell therapies for homologous use in Canada

JOLENE CHISHOLM[1], BARBARA VON TIGERSTROM[2], PATRICK BEDFORD[3]
JULIE FRADETTE[4] & SOWMYA VISWANATHAN[1,5,6]

Food and Drugs Act

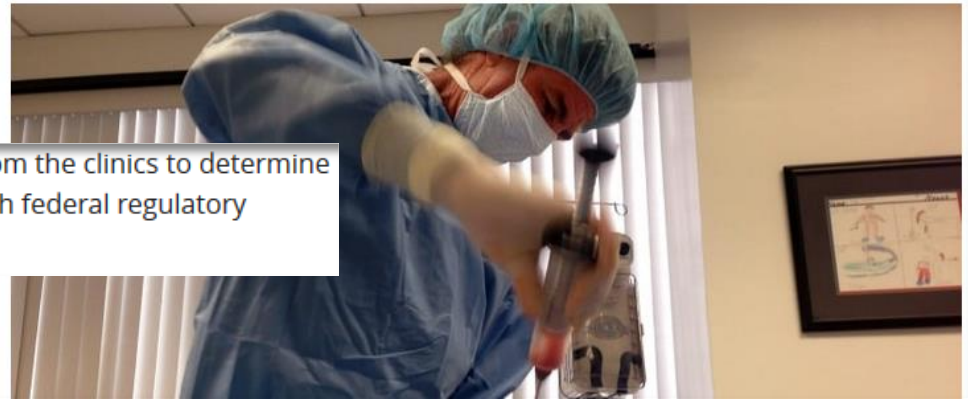
R.S.C., 1985, c. F-27

"Health Canada continues to assess the information gathered from the clinics to determine whether the specific activities being conducted are compliant with federal regulatory requirements," Gagnon said.

More Canadian clinics are offering unproven stem cell therapies, study finds

New report identifies unlicensed clinics advertising their services online

The Canadian Press · Posted: Sep 26, 2018 11:06 AM ET | Last Updated: September 26



Professional Regulation - Providers

Zarzeczny and Clark *BMC Medical Ethics* 2014, **15**:75
http://www.biomedcentral.com/1472-6939/15/75

BMC Medical Ethics

RESEARCH ARTICLE **Open Access**

Unproven stem cell-based interventions & physicians' professional obligations; a qualitative study with medical regulatory authorities in Canada

Amy Zarzeczny[1*] and Marianne Clark[2]

Stem Cell Reports
Perspective
ISSCR
OPEN ACCESS

Professional Regulation: A Potentially Valuable Tool in Responding to "Stem Cell Tourism"

Amy Zarzeczny,[1,*] Timothy Caulfield,[2] Ubaka Ogbogu,[3] Peter Bell,[4] Valorie A. Crooks,[5] Kalina Kamenova,[6] Zubin Master,[7] Christen Rachul,[6] Jeremy Snyder,[8] Maeghan Toews,[6] and Sonja Zoeller[1]

Regulatory Body: General Medical Council

Charge: Professional misconduct

Sanction: License revocation

"Public confidence in the good name of the medical profession is likely to have been damaged by your behaviour." ~ Fitness to Practise Panel Hearing

Consumer Protection & Truth-in-Advertising

False or Misleading Representations and Deceptive Marketing Practices

False or misleading representations and deceptive marketing practices under the *Competition Act*

The *Competition Act* contains provisions addressing false or misleading representations and deceptive marketing practices in promoting the supply or use of a product or any business interest. All representations, in any form whatever, that are false or misleading in a material respect are subject to the Act. If a representation could influence a consumer to buy or use the product or service advertised, it is material. To determine whether a representation is false or misleading, the courts consider the "general impression" it conveys, as well as its literal meaning.

"These treatments are legal, safe, and effective"

"Our adult stem cell therapies are safe, simple, and non-invasive"

"...the technique is safe and there are no side effects"

"This "liquid gold" is then injected in the area of concern. These platelets stimulate growth factors to regenerate ..."

"cellular therapy is a simple but powerful procedure that uses your naturally occurring stem cells to allow your body to heal"


Terminology Tensions
+
A Murky Market
=
Policy Challenge

The Stem Cell Market & Policy Options: A Call for Clarity

3 Key & Interconnected Areas:

I. Clear and comprehensive regulation that is enforced in a consistent and robust manner

II. Scientific and clinical transparency

III. Patient communication and engagement strategies that prioritize informed decision-making, accurate representations and realistic expectations

Zarzeczny, Atkins, Illes, et al. “The Stem Cell Market & Policy Options: A Call for Clarity” (2018) Journal of Law and the Biosciences (accepted)