

A map of the Interior South region of British Columbia, showing various towns and geographical features. The map is overlaid with a grid of blue and red lines. The text is centered over the map.

EXTENDING TRAUMA SURGICAL CAPABILITIES IN RURAL BC - A PILOT PROJECT INVOLVING VANCOUVER GENERAL HOSPITAL AND QUEEN VICTORIA HOSPITAL, REVELSTOKE

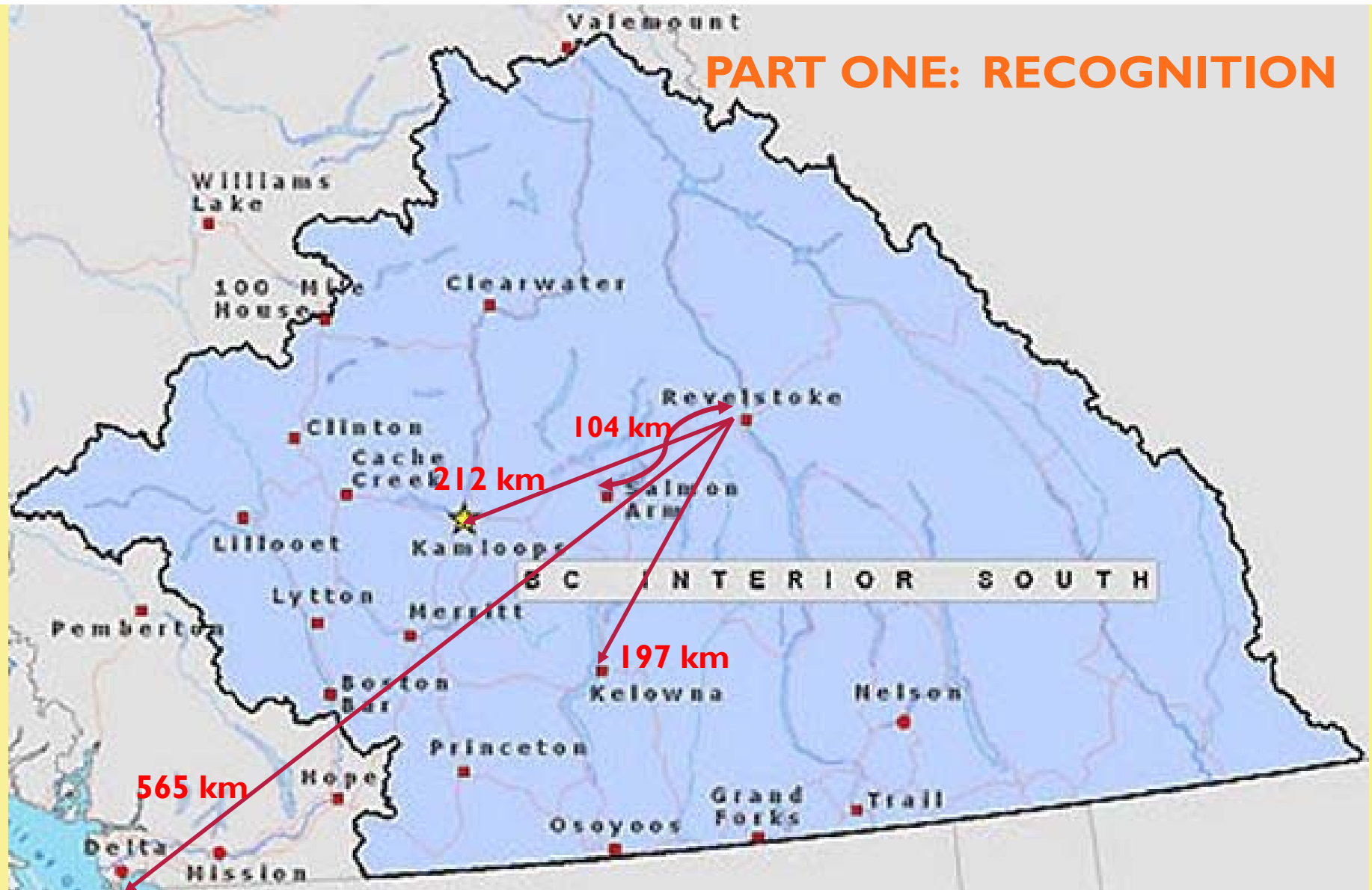
JANUARY 16, 2020

Dr. Phil Dawe, FRCS, Vancouver
Dr. Vikki Haines, ESS, Revelstoke

THE MISSION

- **PART ONE:** RECOGNIZING THE TRAUMA BURDEN IN RURAL AND REMOTE CANADA. Banff 2016 (Simons) & 2018 (Haines) Presentations.
- **PART TWO:** RISING TO THE CHALLENGE – Our Approach
 - ESS Professional Development
 - Networked Care with Remote Presence Technology
 - Tele-Mentored Simulations
 - Tele-Consulting
 - Growing Forward

PART ONE: RECOGNITION







A truck driver snapped this photo as he is stuck at Three Valley Gap. Image credit: Kelly Zawyrucha









CANADA

Three dead, many injured in B.C. avalanche



A view of the Revelstoke Mountain Resort. An avalanche occurred near Revelstoke, on Boulder Mountain, killing three people March 13, 2010.

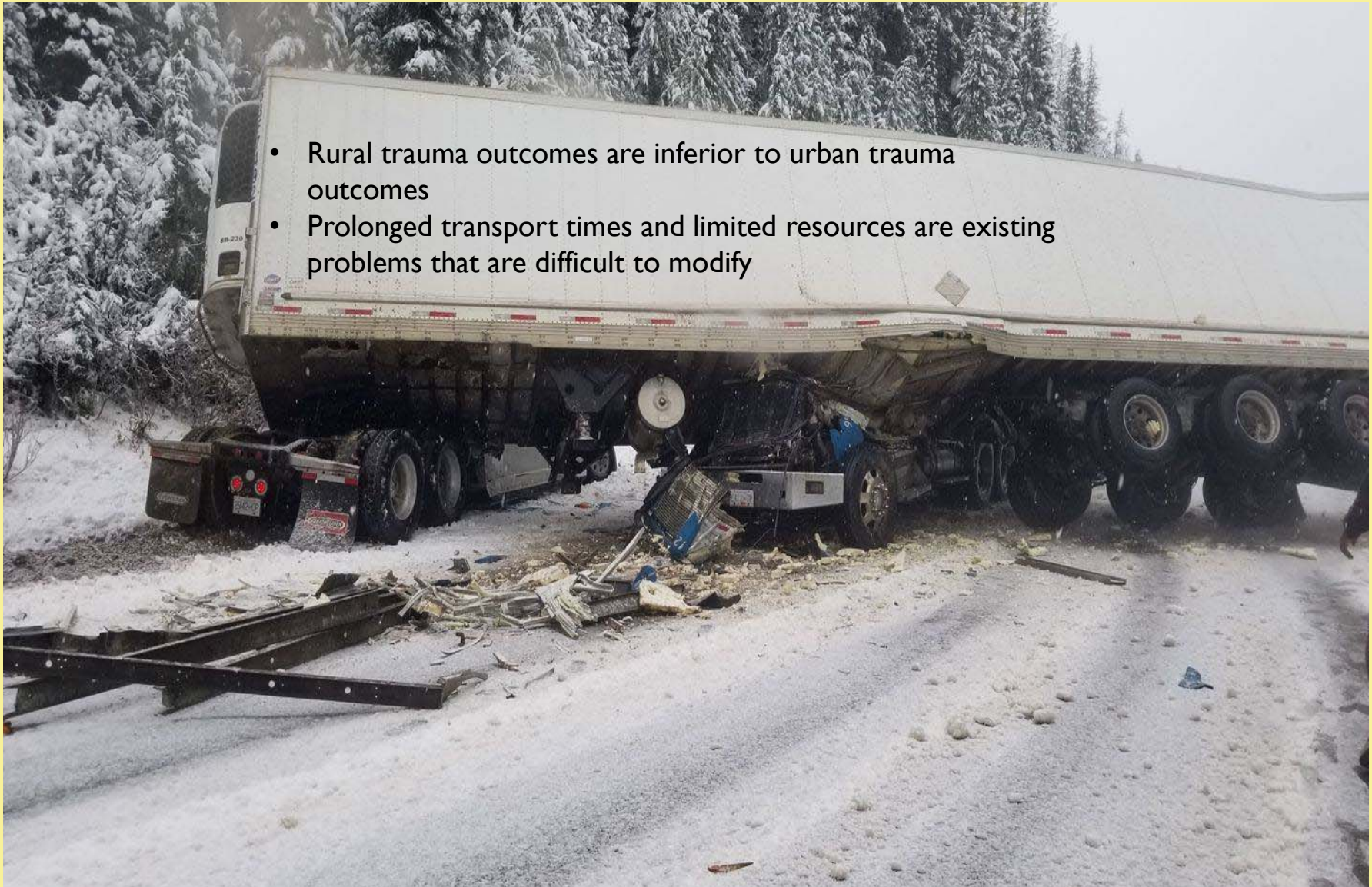
JEFF BASSETT

REVELSTOKE, B.C.
GLOBE AND MAIL UPDATE, THE CANADIAN PRESS
PUBLISHED MARCH 13, 2010
UPDATED MARCH 26, 2017

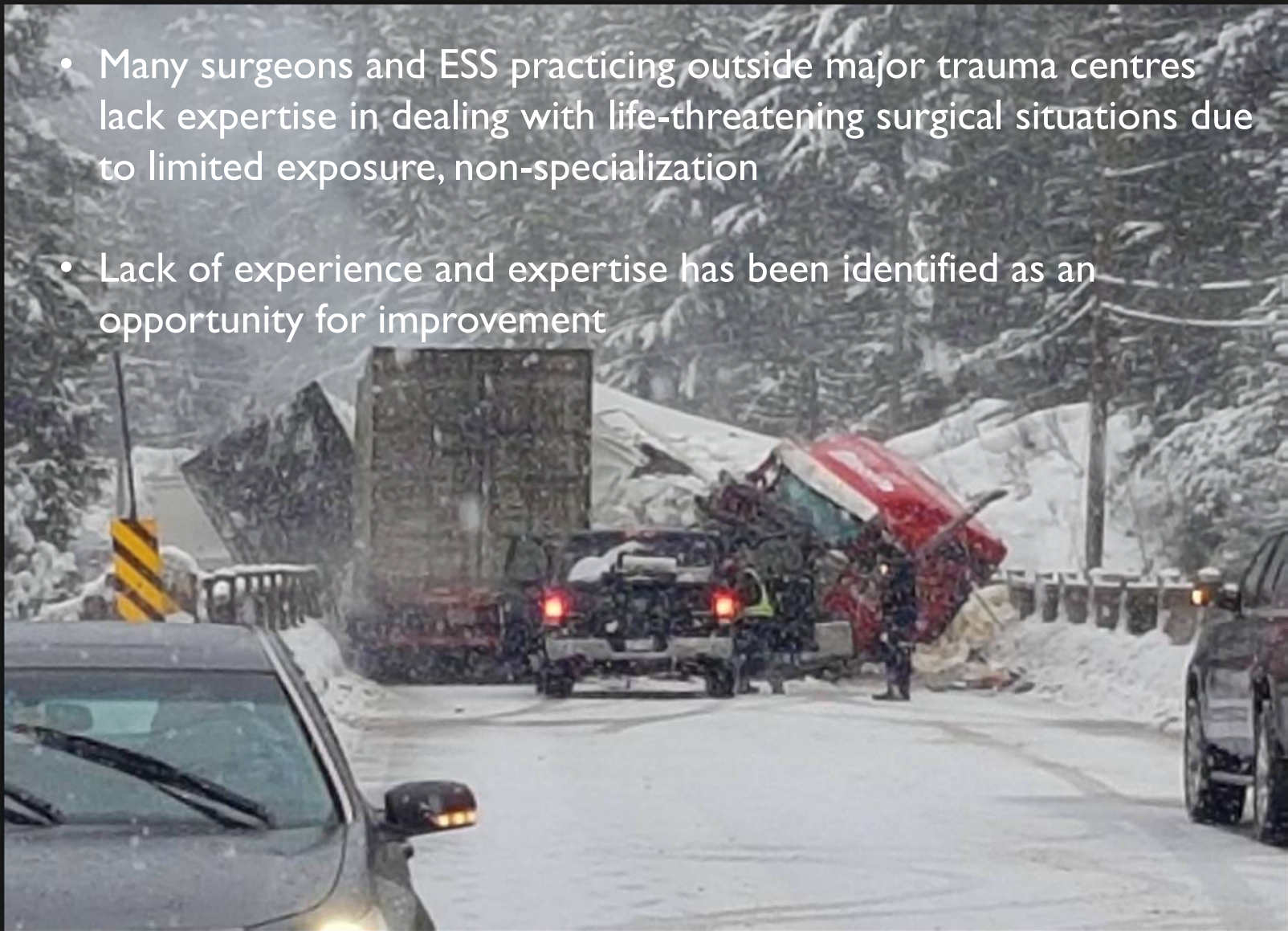
TRENDING

- 1 Mortgage policy changes: what's to come for 2010
- 2 Canadians give gene... paralyzed in Quebec shooting
- 3 A cured trademark d... year battle, Prosciutto heads for Canadian s...
- 4 Alberta's small busin... new labour laws
- 5 China halts oil produ... North Korea in Nove... bite

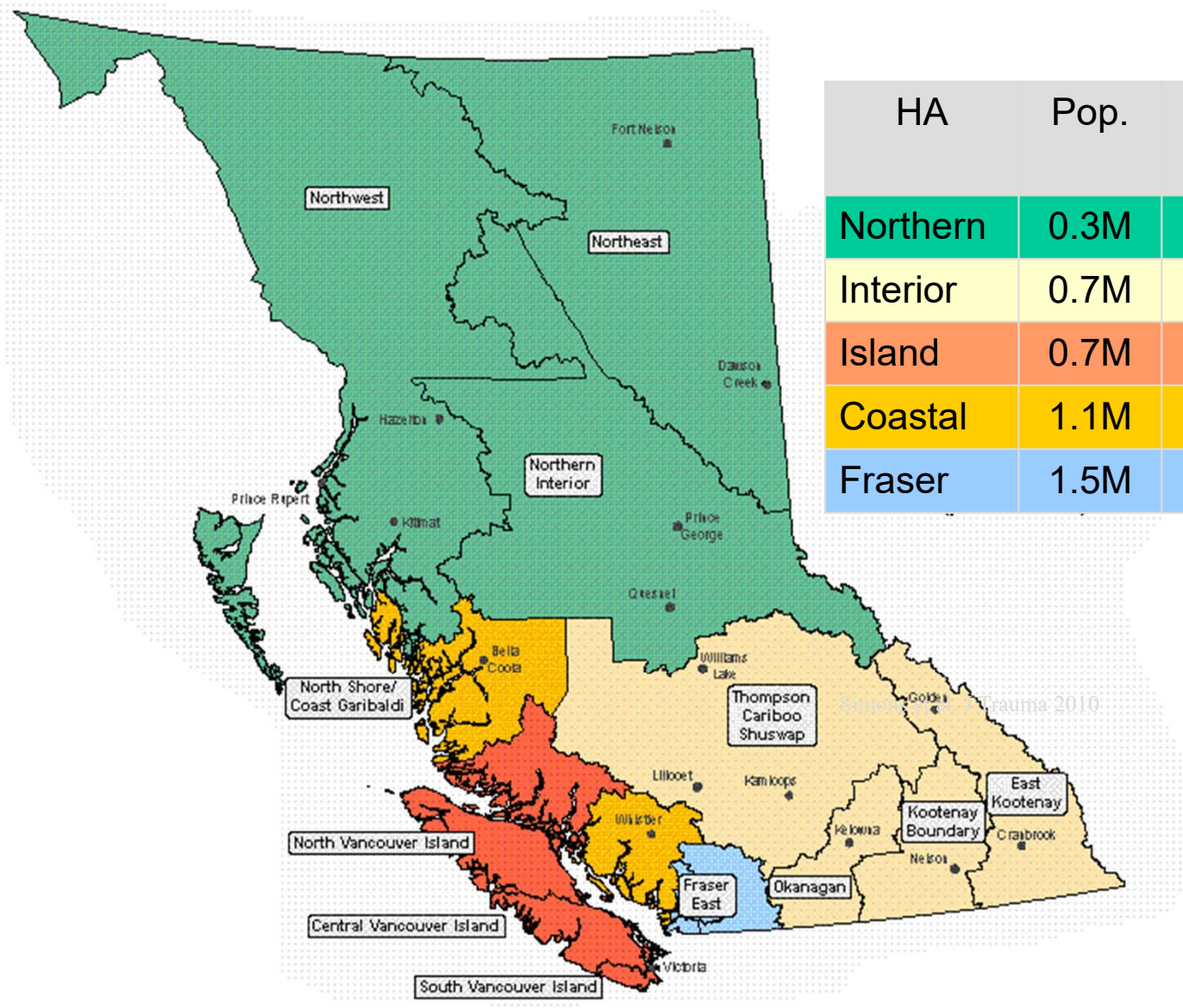
- Rural trauma outcomes are inferior to urban trauma outcomes
- Prolonged transport times and limited resources are existing problems that are difficult to modify



- Many surgeons and ESS practicing outside major trauma centres lack expertise in dealing with life-threatening surgical situations due to limited exposure, non-specialization
- Lack of experience and expertise has been identified as an opportunity for improvement



DEATH RATES DUE TO MVC IN BC



HA	Pop.	Rate per 100,000
Northern	0.3M	25.4
Interior	0.7M	21.0
Island	0.7M	9.5
Coastal	1.1M	5.6
Fraser	1.5M	8.7

B.C. Home

Ministry of Transportation and Infrastructure

Subscribe



Plan Your Route

CV Height Clearance Tool

Commercial Vehicle Chain Requirements

DriveBC Mobile

Variable Speed Limit Signs

Major Events

BC Highway Webcams

Border Delays

Inland Ferry

Report a Highway Problem

More Links...

BC Highway Conditions
toll-free in North America
1-800-550-4997



- Welcome
- Map View
- Conditions & Events**
- Webcam List
- FAQ
- Related Links
- Feedback
- Help

Select Event Type:

- ☒ Road Condition
- ☒ Incident
- ☒ Current Planned Event
- ☒ Future Planned Event

View:

- ☒ All
- ☐ Major Events
- ☐ By Area
- ☐ By Route
- ☐ By Inland Ferry

Refresh data

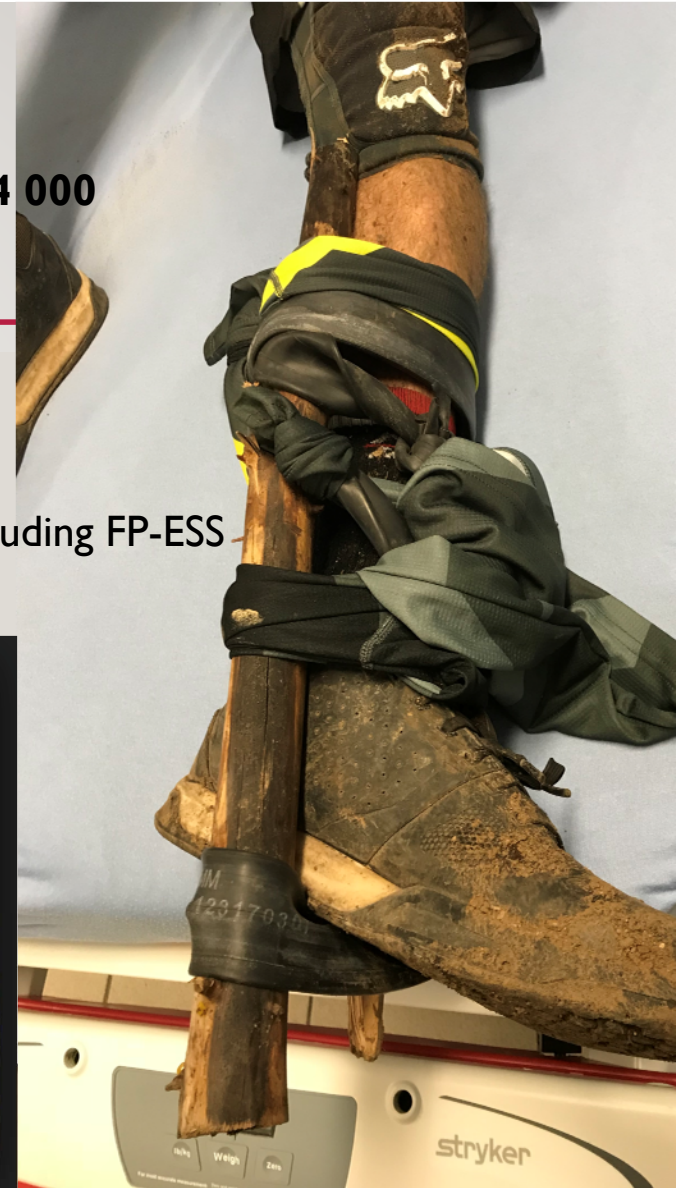
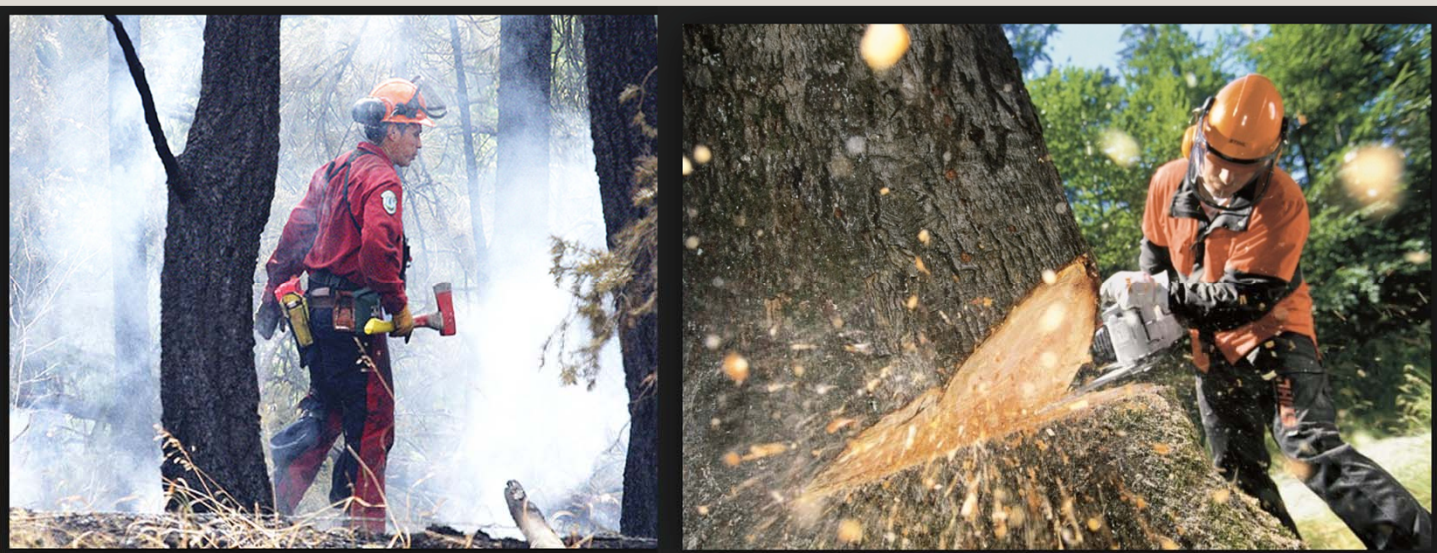
Print

Type	Severity	Route	Description	Last Updated
	Major	Highway 1	Highway 1. Avalanche control work planned between Three Valley Avalanche Gate and Boulder Mtn Avalanche Gate for 10.6 km (6 to 16 km west of Revelstoke). Starting Tue Jan 7 at 4:00 PM PST until Tue Jan 7 at 6:00 PM PST. Road closure planned. If weather persists the control may commence at 2:00 pm instead of 4:00 pm. Next update time Tue Jan 7 at 6:00 PM PST. Last updated Tue Jan 7 at 11:43 AM PST. (DBC-14612) [View on map]	2020-01-07 11:43 AM
	Major	Highway 1	Highway 1. Travel advisory in effect between MacDonald Showshed and Lanark Showshed for 1.4 km (2 to 1 km west of West Boundary of Glacier National Park). Poor visibility due to lighting system power failure in the snow sheds. Technicians are working to repair downed transformer on power line. Next update time Wed Jan 8 at 10:00 AM PST. Last updated Tue Jan 7 at 10:09 AM PST. (DBC-14498) [View on map]	2020-01-07 10:09 AM
	Major	Highway 3	Highway 3. High avalanche hazard between West Avalanche Gate and East Avalanche Gate for 18.0 km (Kootenay Pass). Road closed. Alternate route available from Nelson to Creston. Hwy 3A Kootenay Lake ferry estimated travel time 2.5 hours. Estimated time of re-opening Wed Jan 8 at 6:00 PM PST. Next update time Wed Jan 8 at 12:00 PM PST. Last updated Tue Jan 7 at 11:59 AM PST. (DBC-14601) [View on map]	2020-01-07 11:59 AM
	Major	Highway 37A	Highway 37A. Avalanche control work planned between Pearly Gates and Surprise Pullout/Windy Chain Up for 33.9 km (12 km east of Stewart to 13 km west of Meziadin). Starting Tue Jan 7 at 1:00 PM PST until Tue Jan 7 at 3:00 PM PST. Road closure planned. The road will be closed for 2 hours. Next update time Tue Jan 7 at 1:00 PM PST. Last updated Mon Jan 6 at 5:17 PM PST. (DBC-14591) [View on map]	2020-01-06 5:17 PM
	Major	Highway 4	Highway 4. Construction work between Toquart Bay Rd and Nahmit FSR; Upper Taylor Main FSR (14 km east of Southern Boundary of Pacific Rim National Park). Until Sat Jan 18 at 7:00 AM PST. Road closures Jan 4-17: 1-4am 5-7am 4-5pm 10pm-12am. No closures past 7am Jan 17. Closures 9-11am Jan 6-9 and 13-16. 9am-3pm traffic flushed top of hour excluding closures. 30min delays all other times. Next update time Sat Jan 18 at 7:00 AM PST. Last updated Sat Jan 4 at 9:56 PM PST. (DBC-11784) [View on map]	2020-01-04 9:56 PM
	Major	Highway 5 Both Directions	Highway 5, in both directions. Avalanche control work planned between Exit 202 and Exit 228: Coquihalla Lakes Rd for 26.6 km (11 km south of Great Bear Snowshed to 9 km north of Coquihalla Summit). Starting Wed Jan 8 at 11:00 AM PST until Wed Jan 8 at 3:00 PM PST. THE ROAD WILL BE CLOSED BETWEEN HOPE AND MERRITT. Changes could occur based on weather conditions. Please prepare to use alternate routes. Next update time Wed Jan 8 at 3:00 PM PST. Last updated Mon Jan 6 at 4:50 PM PST. (DBC-14588) [View on map]	2020-01-06 4:50 PM
	Normal	Atlin Hwy	Atlin Hwy. Watch for slippery sections between Discovery Ave and Yukon Border for 50.8 km. Compact snow. Last updated Tue Jan 7 at 12:35 PM PST. (DBC-14588) [View on map]	2020-01-07 12:35 PM



REVELSTOKE

- **2017-18 ER Visits = 6,394 CTAS 1 – 21 CTAS 2 – 325 Pop. 12 – 14 000**
 - No CT. 4 FPAs. 3 ESS. ER docs. OR and ER nurses.
-
- There are many remote communities in Canada w/o general surgeons
 - There is limited exposure to traumatic injury in most surgical residencies, including FP-ESS





DEATH FOLLOWING INJURY

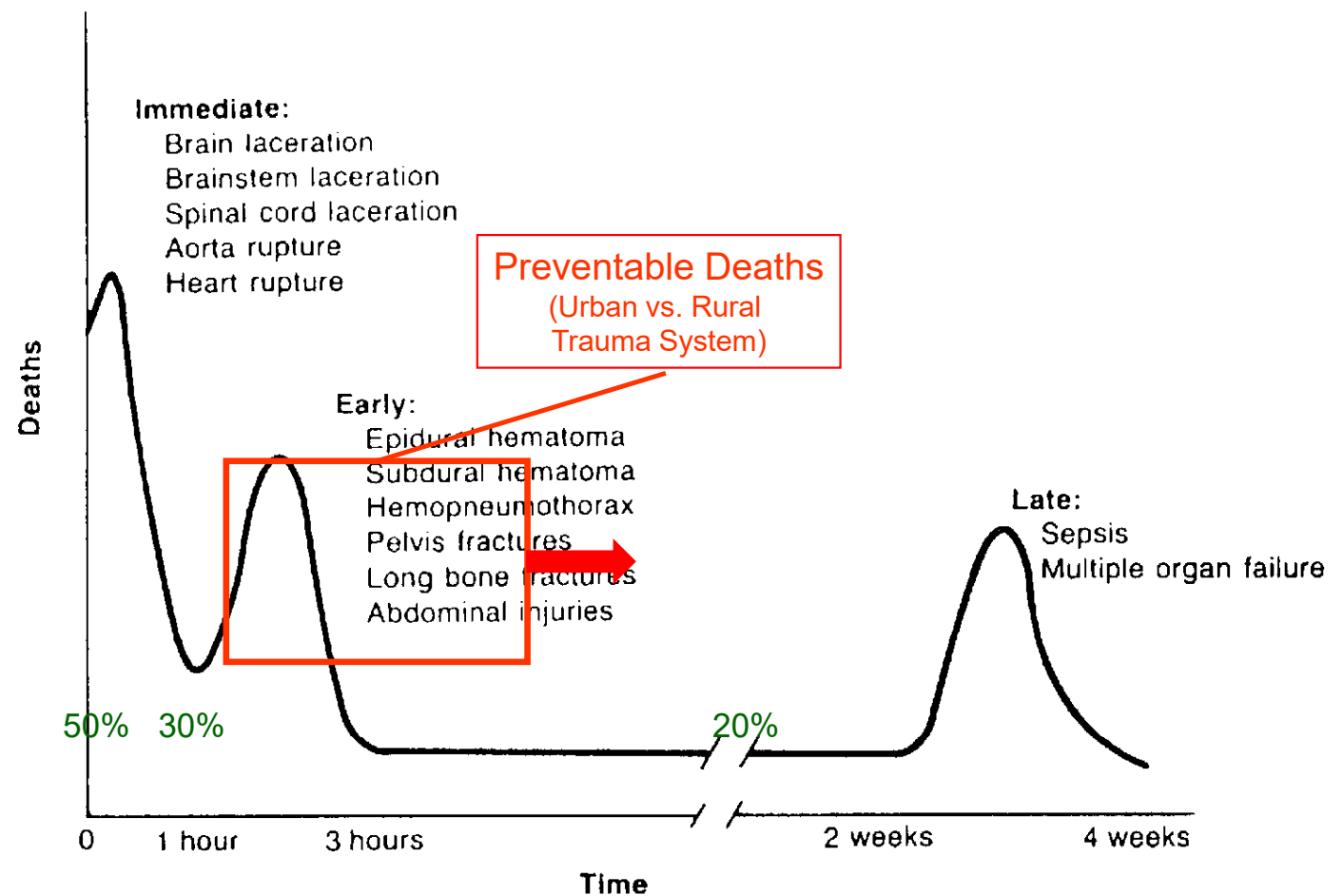


Figure 1-3 Causes of Trauma Death. *Source:* Adapted from "Trauma" by DD Trunkey in *Scientific American* (1983;249:31). Copyright © 1983 by Scientific American, Inc. All rights reserved.

PART TWO: RISING TO THE CHALLENGE: REDUCING RURAL INJURY DEATH

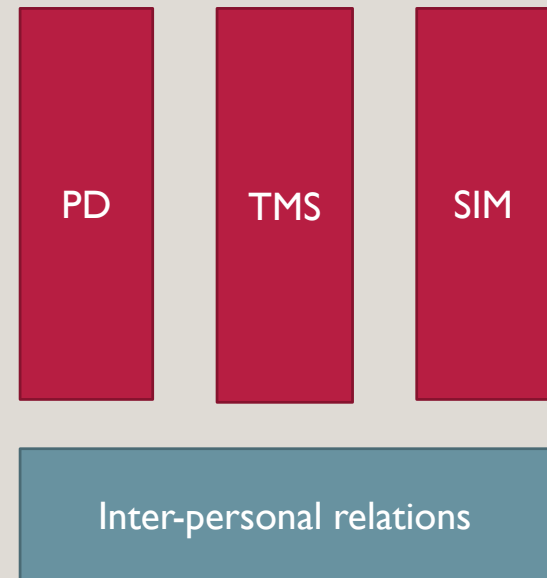
- Prevention
- Discovery and first responder actions
- Prehospital services
- Transportation options
- Rural hospital services
 - Surgical Damage Control
- Transfer and definitive care
- Overall system design

Reducing death from rural injury can only happen in the context of a healthy, functioning rural system

PART TWO: RISING TO THE CHALLENGE – RURAL HOSPITAL SERVICES

Three pillars

- Professional Development
- On-Demand Tele-mentoring Support – Networked Care w/ RPT
- Regular In-Situ Simulation



PROFESSIONAL DEVELOPMENT

- QVH and VGH have partnered to develop several learning opportunities for ESS physicians
 - 6 week Trauma Mini-Fellowship for ESS
 - DSTC – 2 day Definitive Surgical Trauma Care course
 - ASSET – 1 day Advanced Surgical Skills for Exposure in Trauma course
- One of the key benefits to conducting training at VGH has been the fostering of the inter-personal relationships necessary to maintain and enhance this capability

PROFESSIONAL DEVELOPMENT

THE MINI TRAUMA FELLOWSHIP FOR ESS – 6 WEEKS

- Vancouver General Hospital Trauma Service x 5 – 6 weeks
 - Fellow functions at senior resident level. Call-rotas. Teaching rounds. Simulations. OR. Labs.
 - Specific pre-requisites
- Ideally includes DSTC: didactic material + cadaver and pig labs
- Regional and provincial relationship building amongst trauma care providers
 - acknowledgement & support of regional trauma surgeons
- Rural-Urban service network strengthening
- April – May 2018 – 1st fellowship completed by Revelstoke ESS

PROFESSIONAL DEVELOPMENT

DEFINITIVE SURGICAL TRAUMA CARE (DSTC)

- 2-day course, didactic + wet lab
- a course designed for surgeons who may deal with major trauma, and may not necessarily have the experience or ideal volumes for expertise
- timely and appropriate surgical intervention can improve the outcome of a severely injured patient.
- Suggest q4yearly for an ESS practice within an environment supportive of enhanced trauma care delivery, with appropriate network support in place

Manual of Definitive Surgical Trauma Care

SECOND EDITION

Edited by
Kenneth D. Boffard

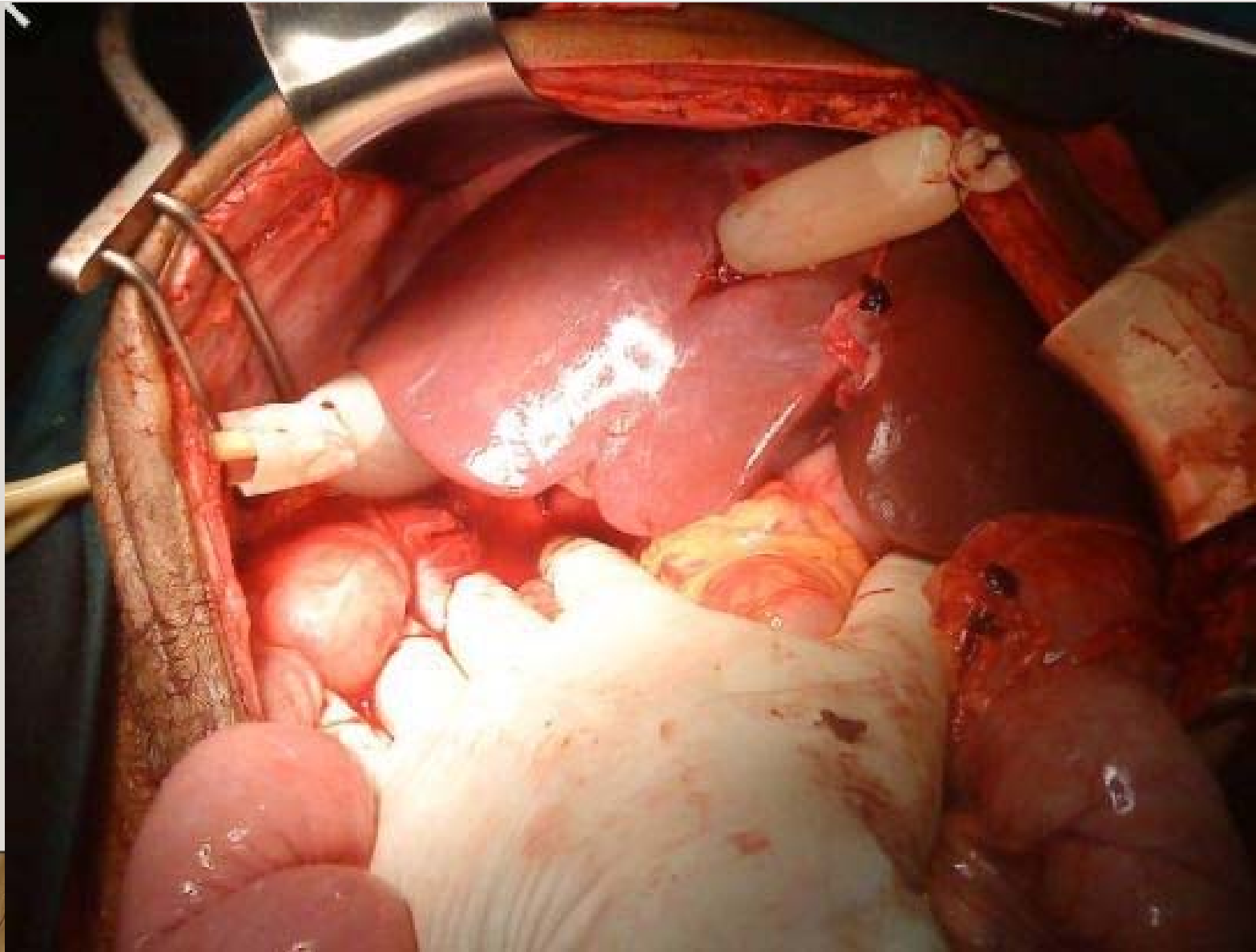
iatsic

International Association for Trauma Surgery and Intensive Care

International Association for
the Surgery of Trauma and
Surgical Intensive Care



- Resuscitation practices
- Principles of Damage Control Surgery
- Control of extremity bleeding
- Control of junctional haemorrhage
- Control of cavitory haemorrhage – head, chest, abdomen



Becoming a Member

Review Member Options, or
inquire about renewals

Trauma Accreditation

Read more on trauma accreditation
options

Education

Education Resources and Course
Information

TAC Conference Information

Information on upcoming
conferences & links to past
conferences

Upcoming Events

Improving rural trauma outcomes: A structured trauma-training program for Rural Family Physicians with Enhanced Surgical Skills - a pilot project.
R.Simons, E.Joos, V.Vogt Haines, P.Dawe

>> More events



TRAUMA 2020: SAVING LIVES & PREVENTING INJURIES

26 Mar 2020 • Halifax Convention Centre, Halifax Nova Scotia Canada

The annual Scientific Meeting and Conference of the Trauma Association of Canada is being held March 26-27, 2020 (pre-conference day March 25) at the brand new downtown Halifax Convention Centre in Halifax Nova Scotia Canada....



DSTC & ASSET COURSES IN MONTREAL APRIL 14-16, 2020

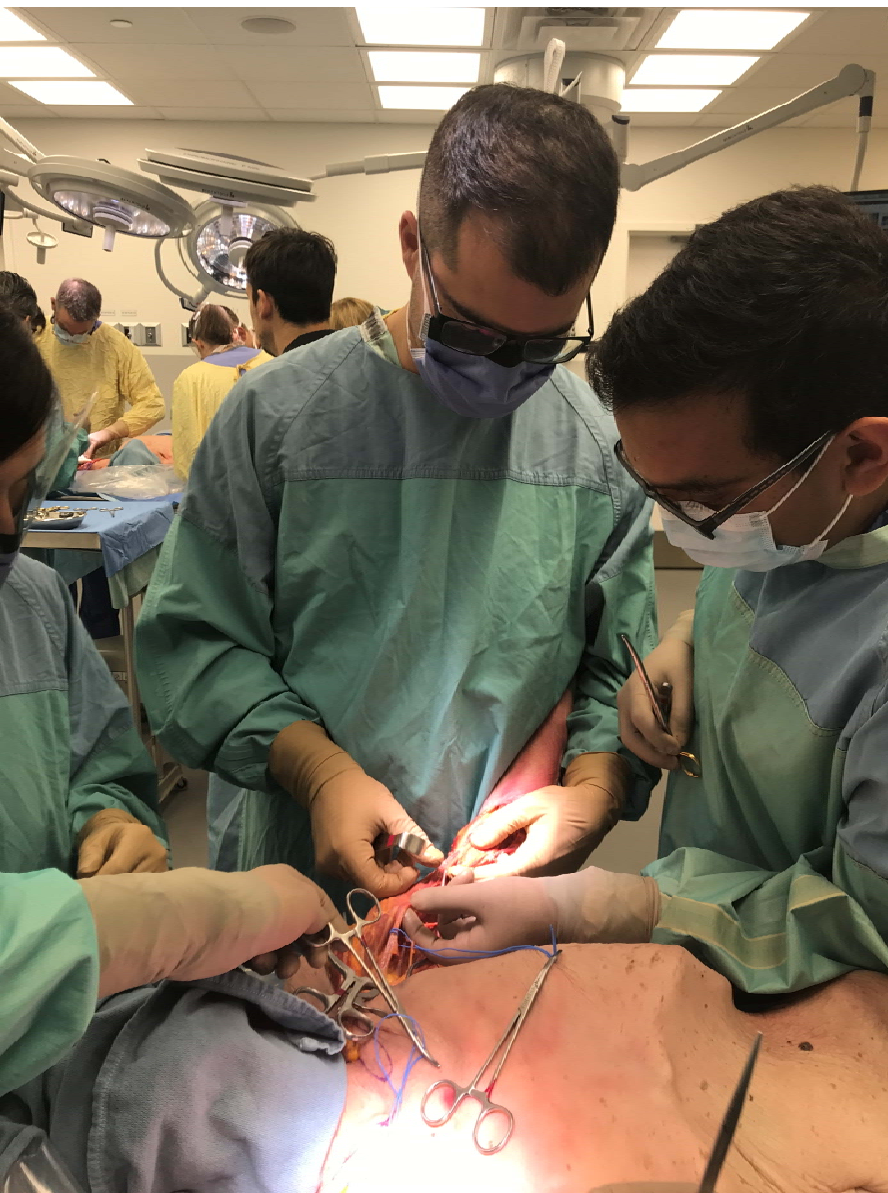
14 Apr 2020 • Montreal, Quebec, Canada



5TH WORLD TRAUMA CONGRESS- BRISBANE, AUSTRALIA

26 Oct 2020 • Brisbane Convention & Exhibition Centre,
Brisbane, Australia







1st ASSET for ESS Dec 3, 2019. | ESS participants from BC/AB/SK.

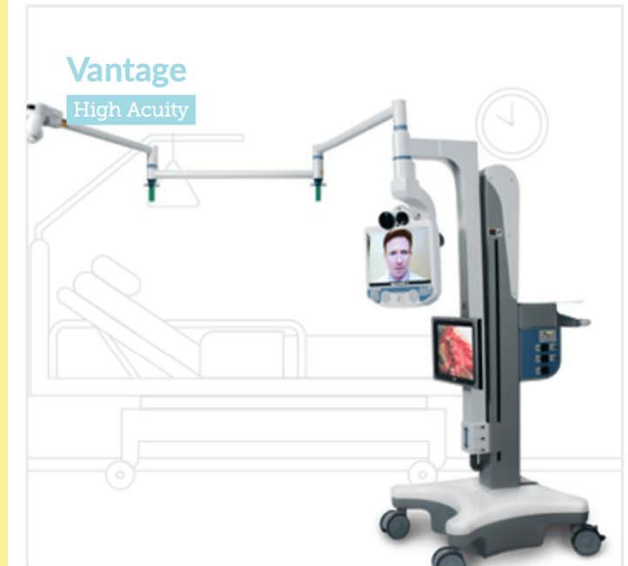
NETWORKED TRAUMA CARE WITH REMOTE PRESENCE TECHNOLOGY

On-Demand Tele-mentoring Support

Regular In-Situ Simulation

- In order to maintain both interpersonal and technologic familiarity between mentors and mentees, regular (**q4-6 months**) in-situ case simulations using tele-mentored support must be pursued.
- Simulation scenarios involve either trauma or acute care surgery and include resuscitation in the ED +/- operative intervention
 - Includes a VGH mentor via remote presence
 - On-site EMS, ERP, ESS, FPA, RNs, lab, xray, ward clerk
 - 2 hours on a weekday morning

- QVH is equipped with an InTouch Health™ remote presence technology (RPT) device that allows audio-visual interaction between mentor and mentees
- Mentors can log onto the InTouch Health™ app from any mobile device and provide guidance as necessary
 - all 6 VGH Trauma/ACS surgeons have oriented to the QVH In-Touch platform app and will accept direct calls for consultation during their regular on-call rota
- Regular use of the technology at both ends is necessary to avoid skill-fade





We will have conducted
4 Sims in ~ 18 months

Scenarios are co-prepared
and co-facilitated by QVH
and VGH, for the QVH
team

Quality Initiative:

- Revelstoke CQI nurse and local project manager facilitate
- Resident research project Gen Sgx R4 w/ P. Dawe.
- Ethics approved.
- Pre and post sim evaluations by all team members



Sims involve complex trauma situations that preclude timely transfer to higher level of care due to the acuity of the patient or external factors

ex: weather, time of day, highway closure

Case examples:
Open book pelvic # w/ hemorrhage, blunt abdominal injury w/ splenic lac & hemorrhage, penetrating chest wound w/ traumatic arrest



Scenarios are designed to lead to the initiation of tele-mentored support for the QVH team by the on-call VGH trauma surgeon for both resuscitation and a damage control operative intervention

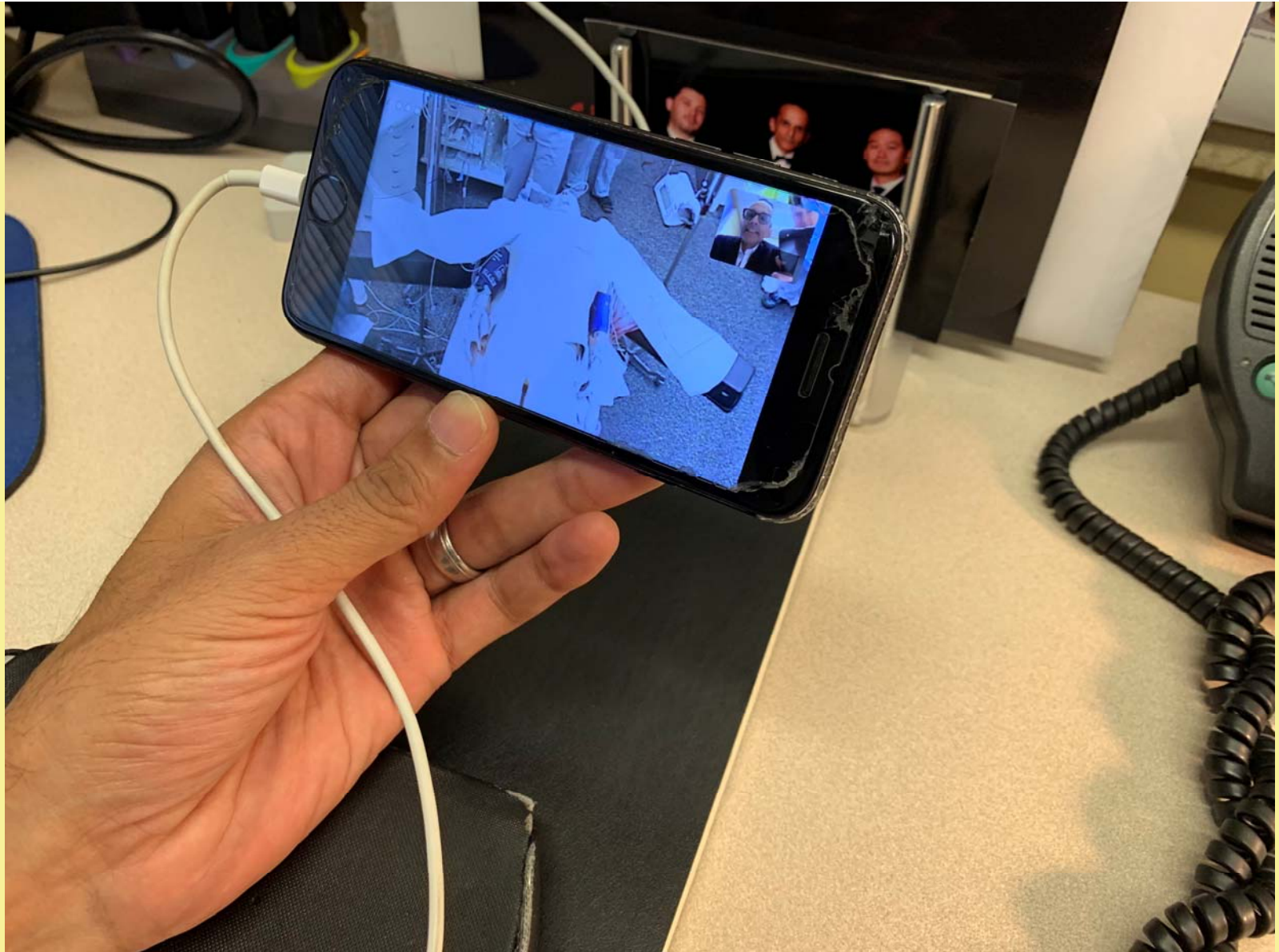
Each Sim concludes with a full debrief

GOALS:

- regular practice of critical scenarios
- familiarity w/ RPT
- a format for feedback, improvement, change implementation



**Dr. Hameed
in the
Revelstoke
OR!**





BENEFIT

- QVH personnel have noted improved confidence, comfort and performance in real trauma situations (regardless of whether tele-mentoring is involved)
- Increased familiarization of ESS/FPA/OR nurses w/ Damage Control procedures
- newly established local trauma committee to implement learnings from sims and networking
 - Equipment
 - Team roles
 - Team activation
- One real case in Revelstoke used the InTouch for on-demand tele-support so far
- Gathering interest from other BC/AB/SK ESS
- Ongoing rewarding collaborations with the VHG Trauma department

COST

- 6 week MTF – Rural Education Action Plan (**REAP**), Advanced Skills Training (AST) Program – funded by the BC Joint Standing Committee on Rural Issues ~ **\$32 000** practice support (including \$2250 for preceptor stipends) + travel and accommodations
- DSTC - **\$1900** - personal **CME**
- ASSET - **\$1200** – personal **CME**
- ATLS - **\$1550** – personal **CME**
- Local Sims - ~ \$3000 per sim = **\$9000 – 12 000/yr** Rural Surgical and Obstetrical Networks (**RSO**N) Initiative
- Onboarding VGH Surgeons w/ InTouch - ~ **\$900** **RSO**N
- Local ER/Critical Care Committee – ~ **\$2000/yr** **Facilities Engagement**

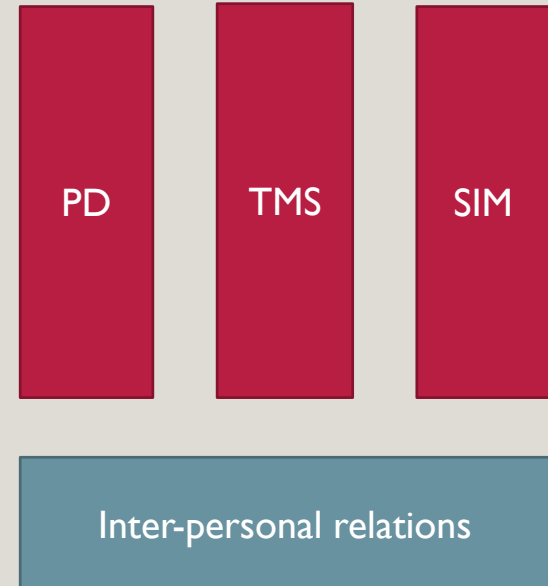
A map of British Columbia, Canada, with a large blue-shaded region covering the interior. The shaded area includes major cities like Vancouver, Victoria, Kelowna, Kamloops, and Prince George. The unshaded areas represent the coastal regions. The title 'GROWING FORWARD' is overlaid on the map.

GROWING FORWARD

- Plan to continue VGH-QVH partnership for now (RSN funding x 3 more years)
- RPT in other rural BC communities (RSN) leads to....?
- Inclusion of FP-ESS in a program of case-based CME for trauma care to be developed by Trauma Services BC
- Participation of BC FP-ESS physicians on TSBC quality review panels, and Clinical Practice Guideline reviews
- Organic evolution of provincial networks as per geography and capacity

FUTURE OF RURAL TRAUMA CARE

- Hub in spoke model
 - Level 3/4 centres supported by Level 1/2 referral centre with professional development, tele-mentoring and simulation
 - Relationships are fostered through above
- Technology is evolving
 - Software and hardware will not be limitations
 - Broadband may be
- Compensation and Liability remain questions
 - Equivalent to consult?
- Other provinces in Canada





Thank You

Stu Iglesias

Richard Simons

Rural Coordination Centre of BC

Trauma Services BC

Graeme Hintz

Rural Education Action Plan

Joint Standing Committee on Rural Issues

Queen Victoria Hospital team

VGH Trauma Department: Phil Dawe, Emilie Joos, David Evans, Morad Hameed, Naisan Garraway, Harvey Hawes