a Canadian Critical Care Knowledge Translation Network

“aC³KTion Net”
Learning Objectives

• To understand the need for knowledge translation (KT) in Critical Care
• To review the need for measurement as a means to improve practice
• To introduce the Canadian Critical Care Knowledge Translation Network (aC³KTion Net)
What is Knowledge Translation?

CIHR defines knowledge translation (KT) as:

“a dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the healthcare system”

Canadian Institutes of Health Research. 
www.cihr-irsc.gc.ca/e/39033.html.
Why is there a need for KT efforts?

• Average of 17 years for new knowledge to have impact on bedside standards of practice

• Reasons include:
  – Slow diffusion of research evidence into practice
  – Limited comparative effectiveness research to guide implementation, investments and use of technologies
  – Lack of health system policies across jurisdictions
  – Research groups and clinical communities working in isolation
  – Literature base is rapidly expanding such that it is difficult for individual practitioners to remain current, assimilate and then apply evidence into practice.

Why is there a need for KT efforts?

- A large gulf remains between what we know and what we practice.
- Variation in implementation is common internationally, within countries, between regions and even between hospitals.
- Even where guidelines exist, large gaps continue to exist between best evidence and practice.
- Example- CV Medicine:
  - Wide variation in use of Stress Testing, PCI, CABG
  - 30% to 40% of patients fail to receive treatments of proven effectiveness
  - 20% to 25% of patients may receive care that is not needed or is potentially harmful

Tu et al, CMAJ 2011; 327: 33-35.
Why Focus KT efforts on Critical Care?

• Patient Vulnerability:
  – ICU patients experience high morbidity and mortality
  – Ontario
    • Level 3 pts- 20% mortality
    • Level 2 pts- 10% mortality

• Patient Volume:
  – ICU patients per year:
    - Canada- 360,000 pts.
Why Focus KT efforts on Critical Care?

• Access:
  – 80% to 100% increase in the number of critically ill patients over the next 20 years
  – Demand will overwhelm capacity in the next 10 years

• Health Care Costs:
  – In Canada (2004): ICU costs were estimated to account for 15.9% of the $39 billion spent on hospital services
  – 0.5 – 1.0 % of GDP
Need for Knowledge Translation in Canadian Critical Care

- Lag between generation of research evidence and its implementation into best practice not well known
- Unknown penetration of new evidence into practice
- Few large scale KT initiatives thus far
  - Patient safety
- Minimal resources to conduct KS activities
- Increasing focus on Quality
  - Deriving best outcomes and best value from resources expended.
Best practices not uniformly applied in critical care

- Wide variations documented in application of commonly applied therapies for critically ill patients
  - Sepsis
  - ARDS
  - Sedation practices
  - Transfusion practices
  - Non-invasive ventilation
  - Renal replacement therapy
  - End of Life Care
  - Etc.

*Hirshberg et al, Chest 2008; 133: 1335.*
Uneven adoption of best practices - VAP prevention

- Recent Survey (518 U.S. Hospitals)
  - 21% used ETTs with SSD
  - 40% use antimicrobial mouth rinses
  - 82% utilized semi-recumbent positioning
- Multi-centre VAP CPG Implementation study
  - Concordance with recommendations: 59% (97% of practitioners surveyed were aware of recommendations)
  - Wide variability in adoption of preventive measures
  - Wide variation between sites

Krein et, Infect Control Hosp Epi. 2008
Sinuff et al, CCM, 2013
Variance in Practice

- Potential reasons include:
  1. Lack of research evidence
     - Can inform future research directions
  2. Lack of awareness or lack of dispersion of best practices
     - Can be improved by knowledge synthesis or knowledge translation activities
Expanding Critical Care Literature Base: Number of critical care RCTs published per year

Modified from Kahn, CCM 2009; 37: S147
Challenge in delivery of Critical Care from a KT perspective

• Team based care
  – Need to reach RNs, RTs, Pharmacists, Dieticians, PTs etc.

• Physician challenges:
  – Large amounts of critical care delivered by non-intensivists
  – Critical care may only be a small proportion of their practice
  – Differing backgrounds for MD entry into critical care
  – Episodic care by physicians

• Institutional challenges
  – Variability in available resources.
a Canadian Critical Care Knowledge Translation Network

aC³KTion Net
aC³KTion Net

• Network of ICUs (Networks) from across Canada
  • Academic
  • Community

• Primary activity will be Knowledge Translation and development of Critical Care Knowledge Synthesis products
  • Not KT Research

• Measurement of uptake/outcomes
To improve the care of critically ill through the application of best practices as defined by research evidence in a timely manner thereby reducing the morbidity, mortality and impact of critically patients on the health care system.
aC³KTion Net Scope

• All critical care units in Canada are eligible and encouraged to participate.

• Best practices that will be included in network activities will be those pertaining to:
  – clinical practice
  – ICU organization
  – administration and organization of critical care resources.

• We will include multi-professional representation to encompass the multi-disciplinary nature of ICU teams.
aC³KTion Net Objectives

1. To bring together critical care researchers and knowledge users (health care professionals, national professional associations, and health care system decision makers) to optimize resources and support collaborative knowledge translation activities.

2. To survey practice at baseline and after implementation efforts to guide knowledge translation activities and measure the results of our efforts.

3. To conduct knowledge synthesis activities and develop knowledge products to inform critical care best practices.
aC³KTion Net Collaborators/Decision Makers

1. Canadian Critical Care Society
2. Canadian Association of Critical Care Nurses
3. Canadian Society of Respiratory Therapists
4. Canadian Patient Safety Institute
5. Canadian ICU Collaborative
Network Activities

• Measurement of current practice

• Knowledge Synthesis: Development of clinical practice guidelines, evidence syntheses and scoping reviews.

• Testing of Knowledge Products: Reviewed and tested before implementation, to ensure acceptability, ability to achieve intended purpose and ascertain possible barriers

• Knowledge Implementation: Local teams will use strategies/tools tailored to knowledge product.
  – Education, protocols, checklists, order sets, organizational changes and reminder systems
  – PDSA cycles to track implementation activities
Measurement - Why?

- Even when motivated to change our behavior, we cannot manage what we do not measure.
- Measurement can identify gaps in best practice.
- Measurement can illuminate the results of our efforts at implementing best practice.
- Measurement can inform future research direction.
Data Collection

- Modified point prevalence surveys
  - Periodic data collection on cohorts of ICU patients
    - 30 pts for large ICUs (> 15 beds)
    - 20 pts for small ICUs (< 15 beds)
- eCRF with MDS that is scalable and modular for new network initiatives as they are developed
- Reports of performance for each ICU from data collected
aC³KTion Net Activity

Data Elements

1. Core Data Set
2. Practice Data – specific practices
KT Initiatives- how to choose?

• **Short term**: Knowledge Products Ready for Implementation after first data collection period
  - E.g. guidelines
  - VAP CPGs, Hypothermia Guidelines, Sepsis guidelines etc.

• **Longer term**: Initiatives based on demonstration of practice variation
  - To be based on data collected during baseline data collection
  - Will inform future KT activities/future Research activities
  - What data to collect?
Selection process for initiatives

• Delphi technique
  – Input from Steering/Scientific Committee
  – Researchers, clinicians, knowledge users, decision makers

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<tr>
<th>Composition of Steering/Committee Scientific Committee</th>
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<tbody>
<tr>
<td>31 Members Total (Overlap)</td>
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<tr>
<td>• 21 MDs</td>
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<tr>
<td>• 4 RNs</td>
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<tr>
<td>• 1 Pharmacist</td>
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<tr>
<td>• 1 RT</td>
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<tr>
<td>• 9 Knowledge Users</td>
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<tr>
<td>• 5 National organization members (CCCS, CACCN, CSRT, CPSI, CICU)</td>
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Initiatives To be Included at the start

1. Sepsis guidelines: new surviving sepsis guidelines
2. Canadian Nutrition Guidelines in the Critically Ill
3. Implementation of revised Ventilator Associated Pneumonia Guidelines
Top *Future* KT Initiatives

1. **End of Life Care**
2. Sedation/Analgesia
3. Early Mobilization
4. Delirium (screening/treatment)
5. Communication in the ICU
6. Anti-Microbial Stewardship
7. Quality Improvement Initiatives
8. Fluid Therapy (resuscitation, maintenance)
9. Utilization of non-invasive mechanical ventilation
Model for Participation

• Main benefits of participation
  – Access to KT activities/initiatives
  – Access to KS products
  – Access to educational events/webinars
  – Access to a repository of knowledge products, protocols etc.
  – Opportunity to participate in incubator units
  – Ability to influence network activities
  – Benchmarked reports of performance with national peers
  – A vehicle to drive critical care quality improvement

• ICUs provide periodic data in return
Current Status

- **aC³TION Net** website
  - Operational

- Recruitment of ICUs for participation
  - Ongoing
  - Over 100 ICUs registered in aC³KTION Net (approx. 40% of all acute care ICUs in Canada)
Current Status

• Baseline Data Collection
  – Started and ongoing

• Development of barriers/enablers Questionnaires
  – Completed

• Repository of KT tools/Products
  – Being populated, open end of November

• KT activities
  – Slated for early 2014
Challenges

- Reaching out and enrolling ICUs
  - No National Database
- Incentivizing ICUs to participate
  - Value add of aC³KTION Net
- Local Resources
  - Resources for data collection
    - Data collection minimization
  - Resources for KT activities
- Priority of QI initiatives
  - Very few facilities have dedicated resources
Questions/Comments?