How to implement a nutrition guideline:

Does knowledge change behaviour?

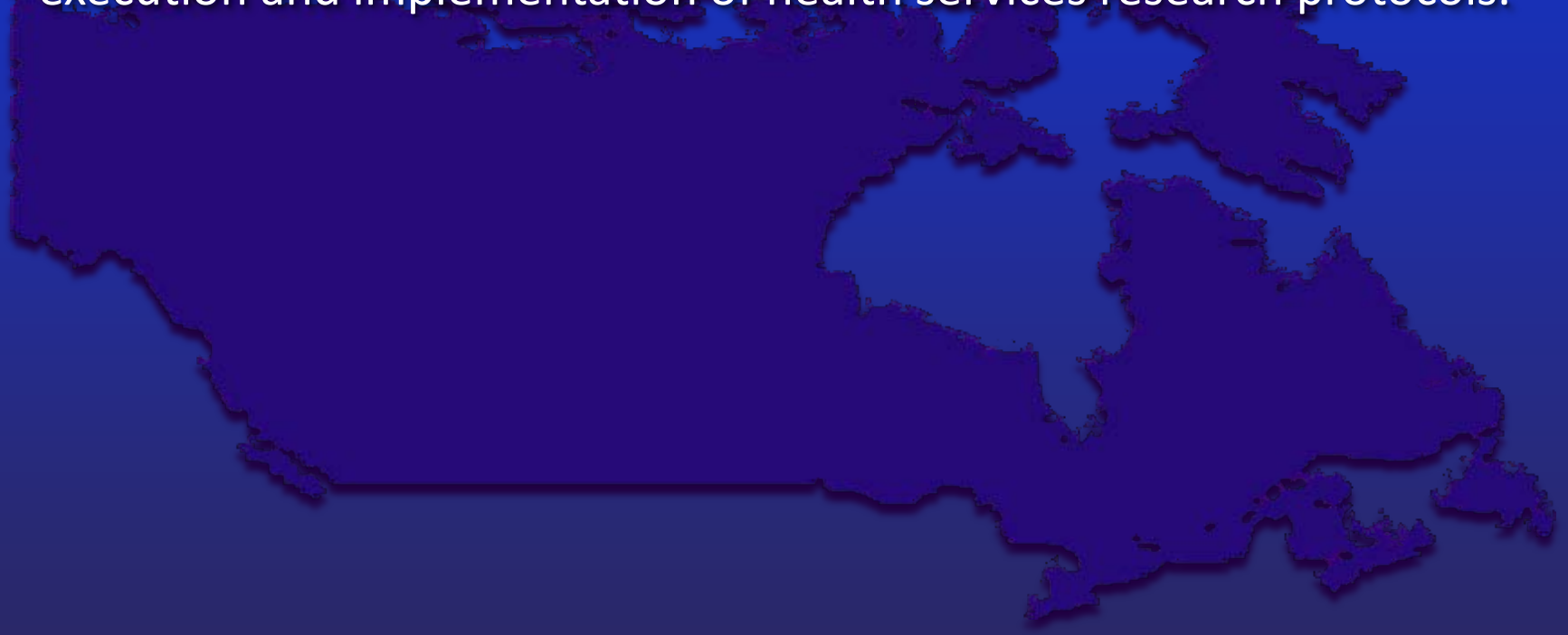
Dr Gordon S. Doig,
Associate Professor in Intensive Care,
Northern Clinical School Intensive Care Research Unit,
University of Sydney, Sydney, Australia
www.EvidenceBased.net
gdoig@med.usyd.edu.au

Overview

- Details of a project evaluating the benefits of a nutrition guideline
- Describe the practice change that was achieved
- Described how the practice change was achieved
- Summary

The Critical Care Research Network: CCRNet

"CCRNet is a voluntary alliance of Critical Care Units whose mission is to improve patient care and resource utilization through the development, execution and implementation of health services research protocols."



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- member hospitals expressed an interest in understanding nutritional support in early 1990's

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- nutrition therapy was started *much later* than the literature indicated
- EN was frequently stopped due to :
  - "diarrhea"
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To address this *evidence-practice gap* a formal study was initiated to find out if improving nutrition therapy resulted in improved patient outcomes.

14 CCRNet hospitals volunteered to participate.

Guideline development conference

- an extensive literature search was conducted
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Box. Evidence-Based Recommendations Approved (Ratified) for Inclusion in the Guideline at the Consensus Conference

Grade B+

Recommendation favoring enteral nutrition over standard care (nothing by mouth)

5 Level II randomized controlled trials (RCTs). Supported by positive meta-analysis and validated evidence-based guideline (EBG) (Algorithms for Critical Care Enteral and Parenteral Therapy [ACCEPT] trial).

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Recommendation favoring enteral nutrition supplemented with parenteral nutrition if 80% of goals not met by 72 hours with enteral nutrition alone (after consideration of postpyloric feeding, prokinetics, or both)

4 Level II RCTs. Supported by validated evidence-based guideline (ACCEPT).

Recommendation favoring protocolized management of diarrhea

Supported by validated evidence-based guideline (ACCEPT).

Recommendation favoring protocolized definition of intolerance of enteral nutrition, which includes gastric residual values >200 mL

Supported by validated evidence-based guideline (ACCEPT).

Grade B–

Consider parenteral nutrition with glutamine instead of standard parenteral nutrition

4 Level II RCTs. Supported by meta-analysis, heterogeneity present.

Glutamine may be beneficial in select patients. To identify which patients may benefit, each constituent RCT should be reviewed and clinical judgment should be exercised.

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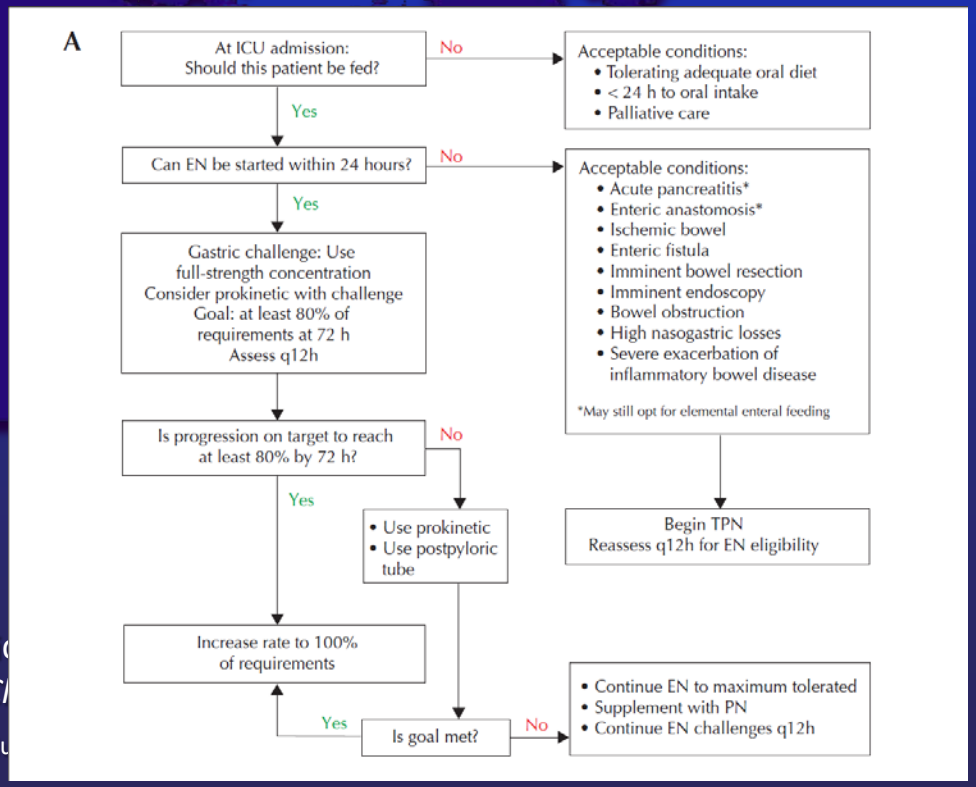

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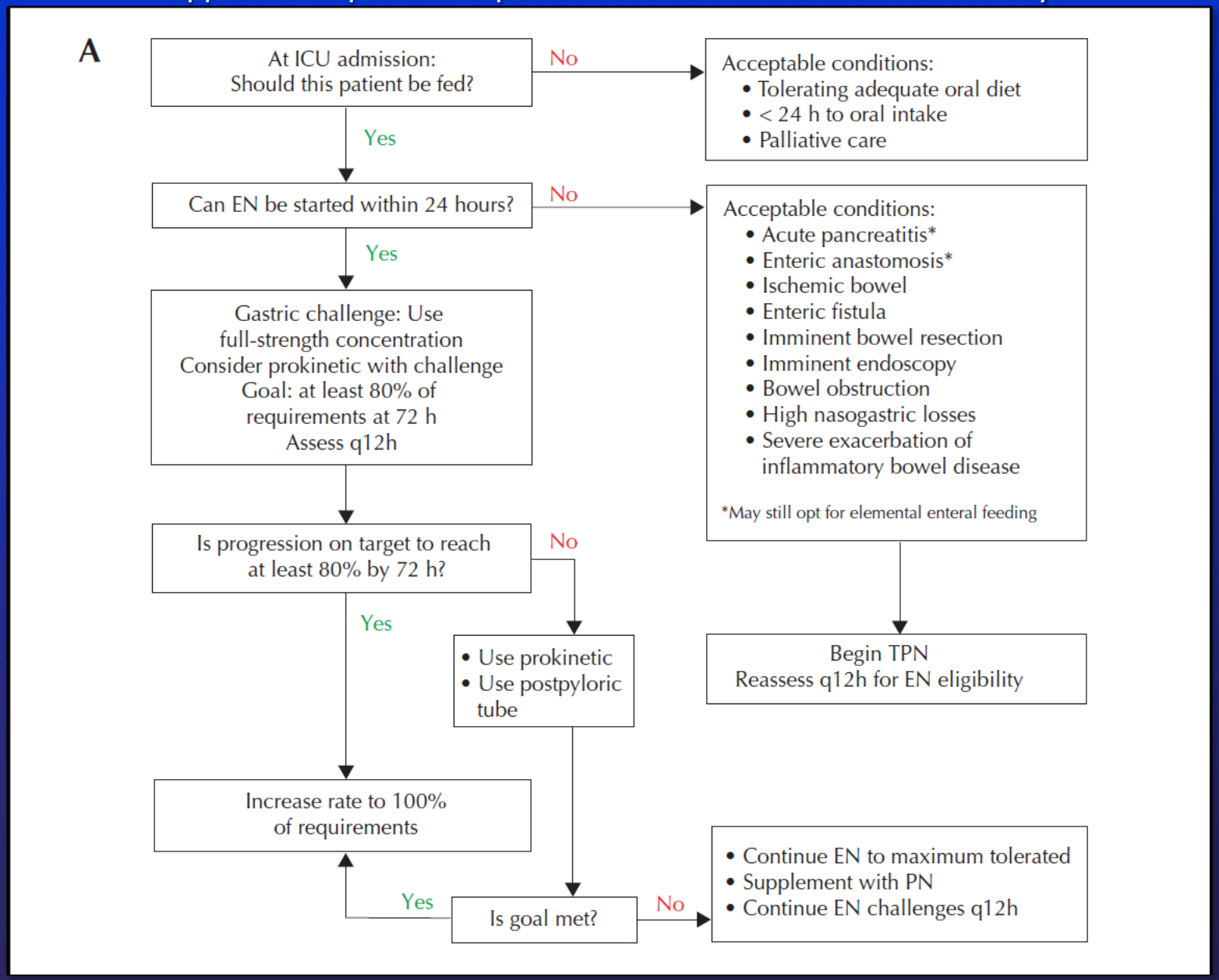

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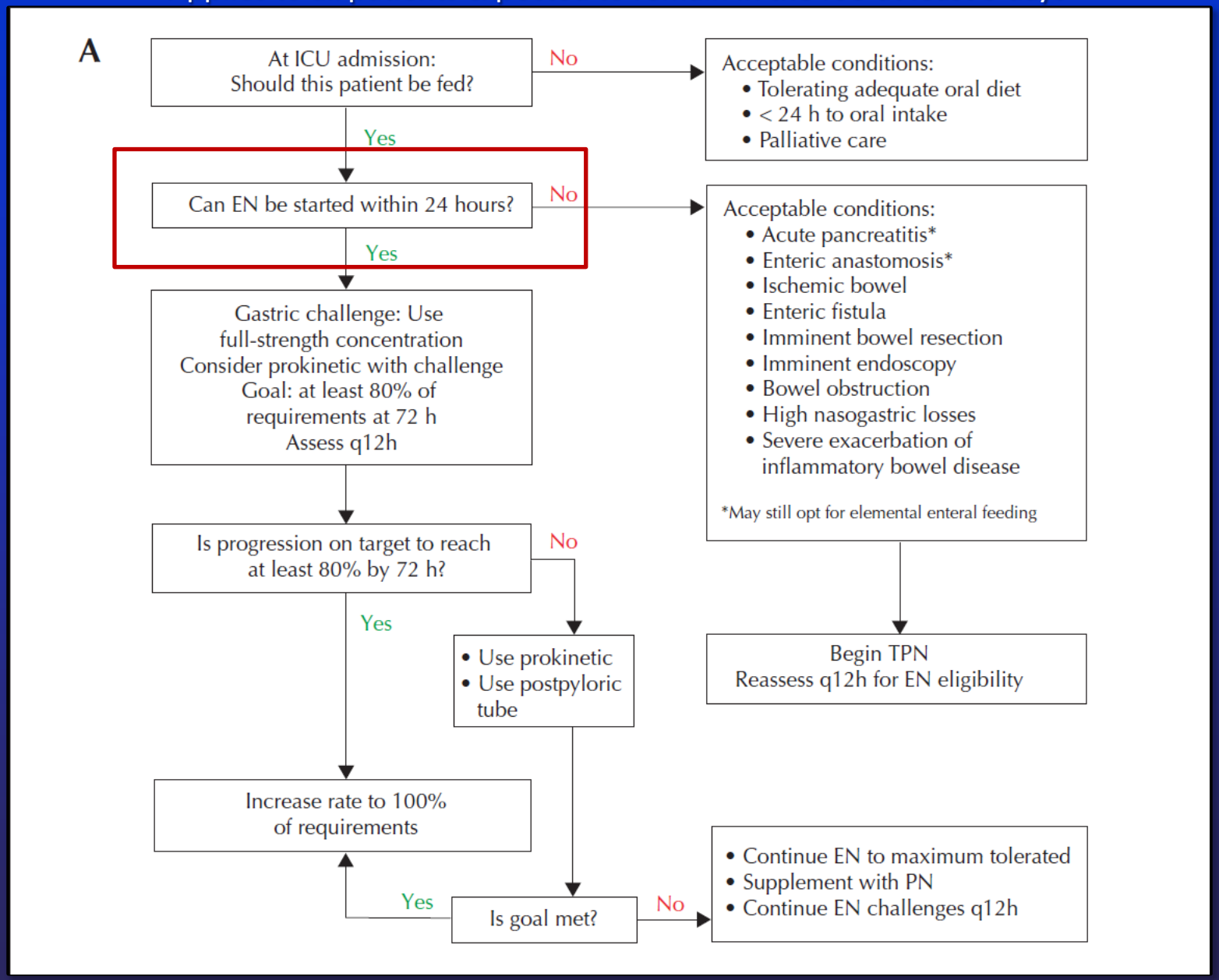

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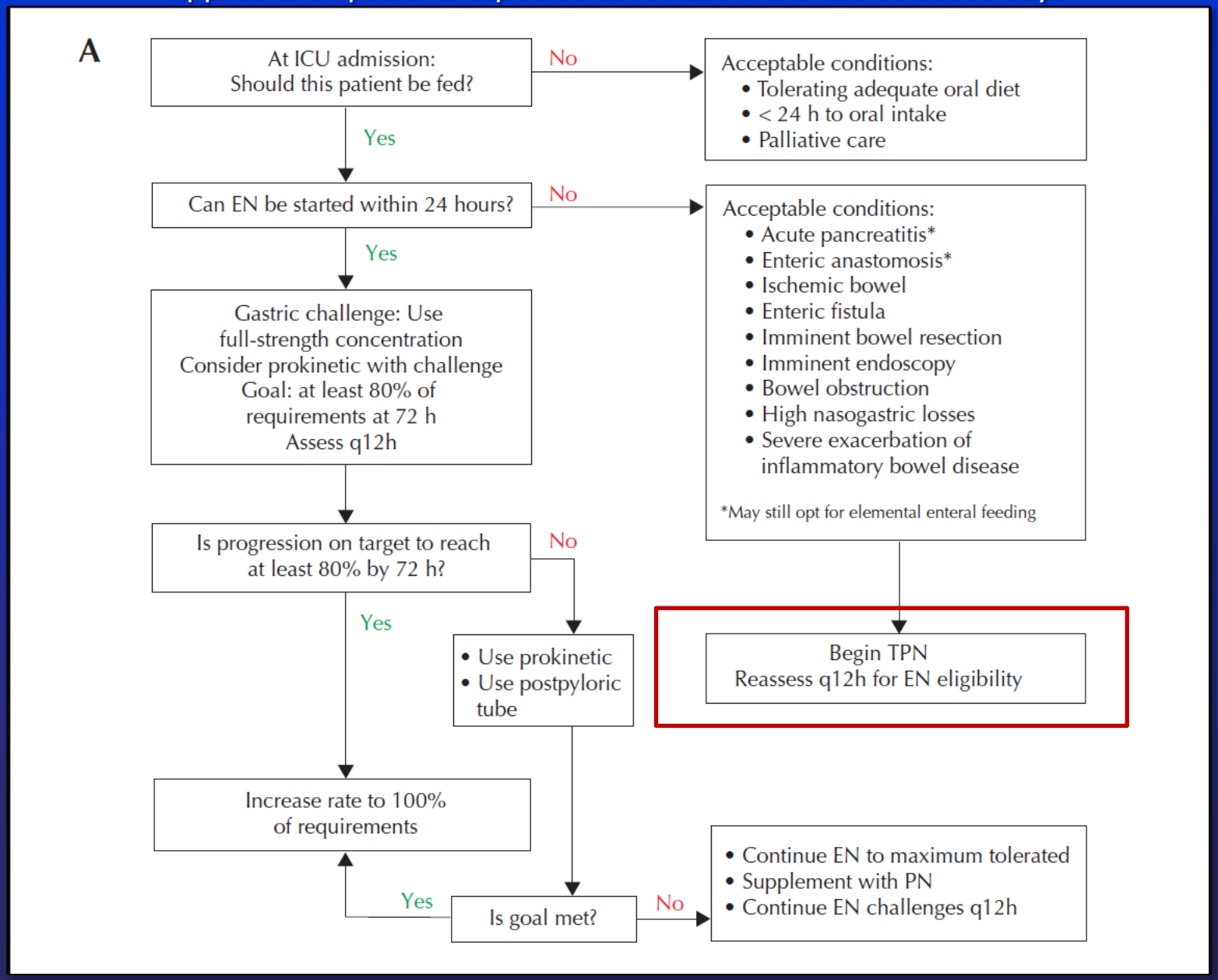

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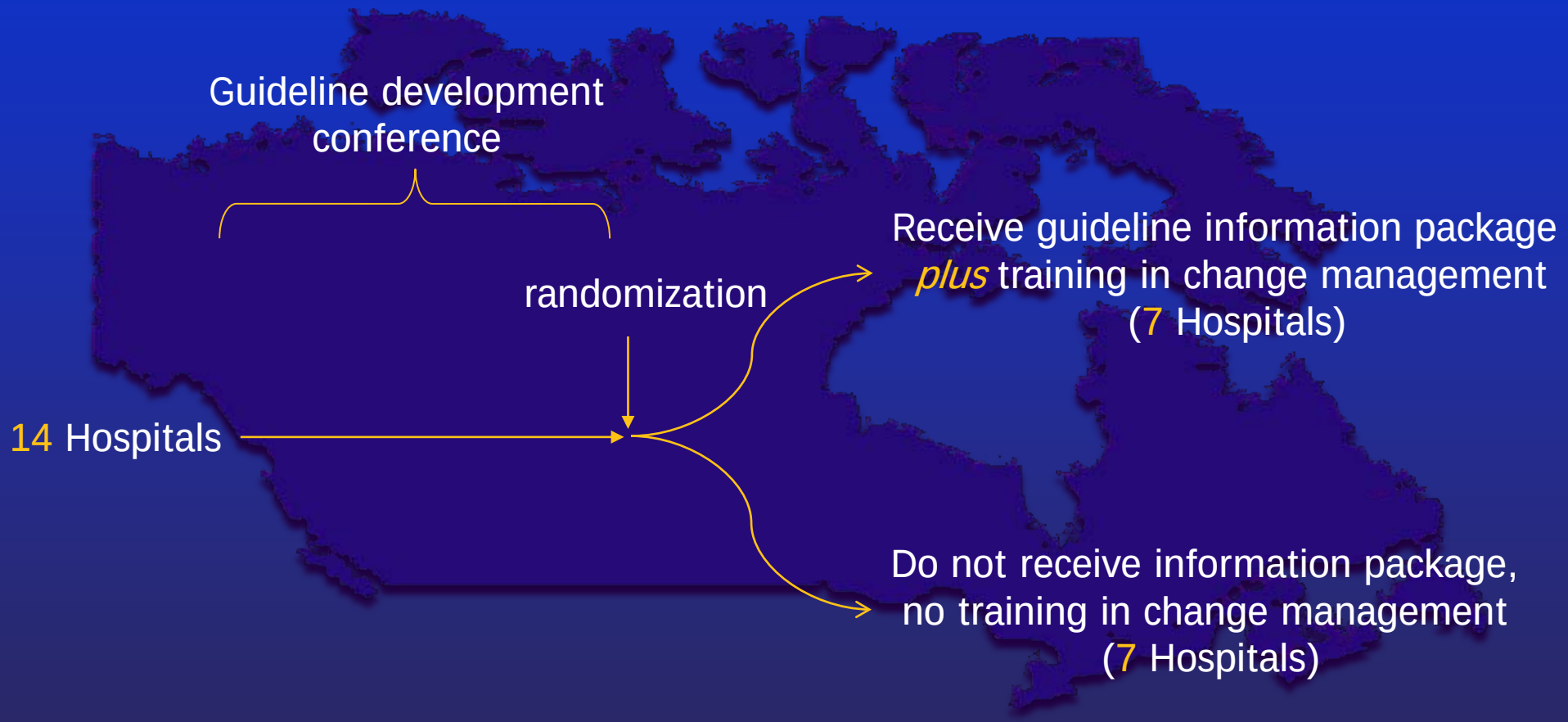

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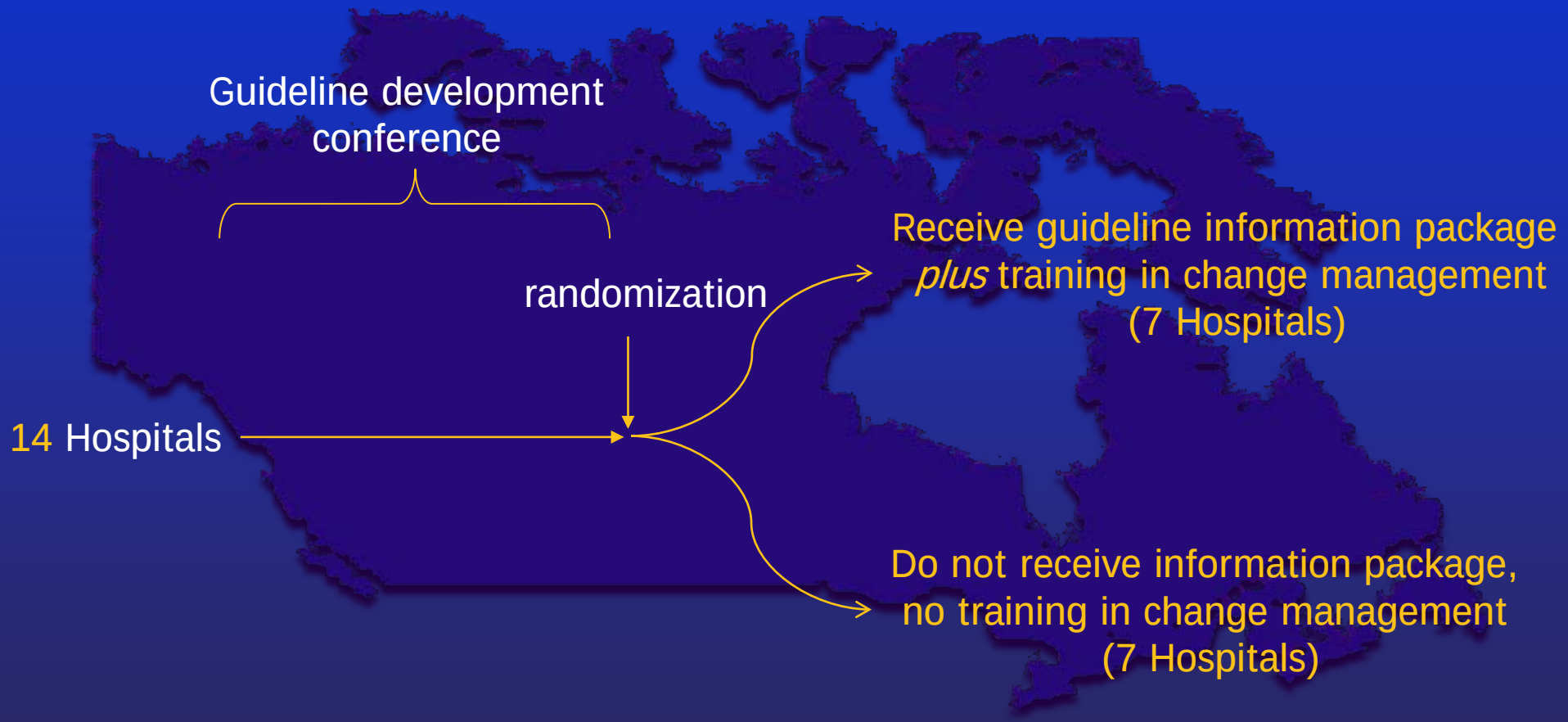

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Randomized results: balance

	Control Hospitals	Guideline Hospitals
Patients enrolled	214	248
Age	67.9 years	64.6 years
Admission APACHE II	22.5	20.6

Randomized results: nutrition therapy

	Control Hospitals	Guideline Hospitals	p-value
ICU admit to EN	2.34	1.53	0.07
	days		
ICU admit to EN/PN	1.99	1.47	0.09
	days		
EN delivered	5.31	6.97	0.02
	days fed / 10 patient days		
TPN delivered	1.94	2.25	0.65
	days fed / 10 patient days		
EN or TPN delivered	6.81	8.63	0.01
	days fed / 10 patient days		

Randomized results: Primary outcomes

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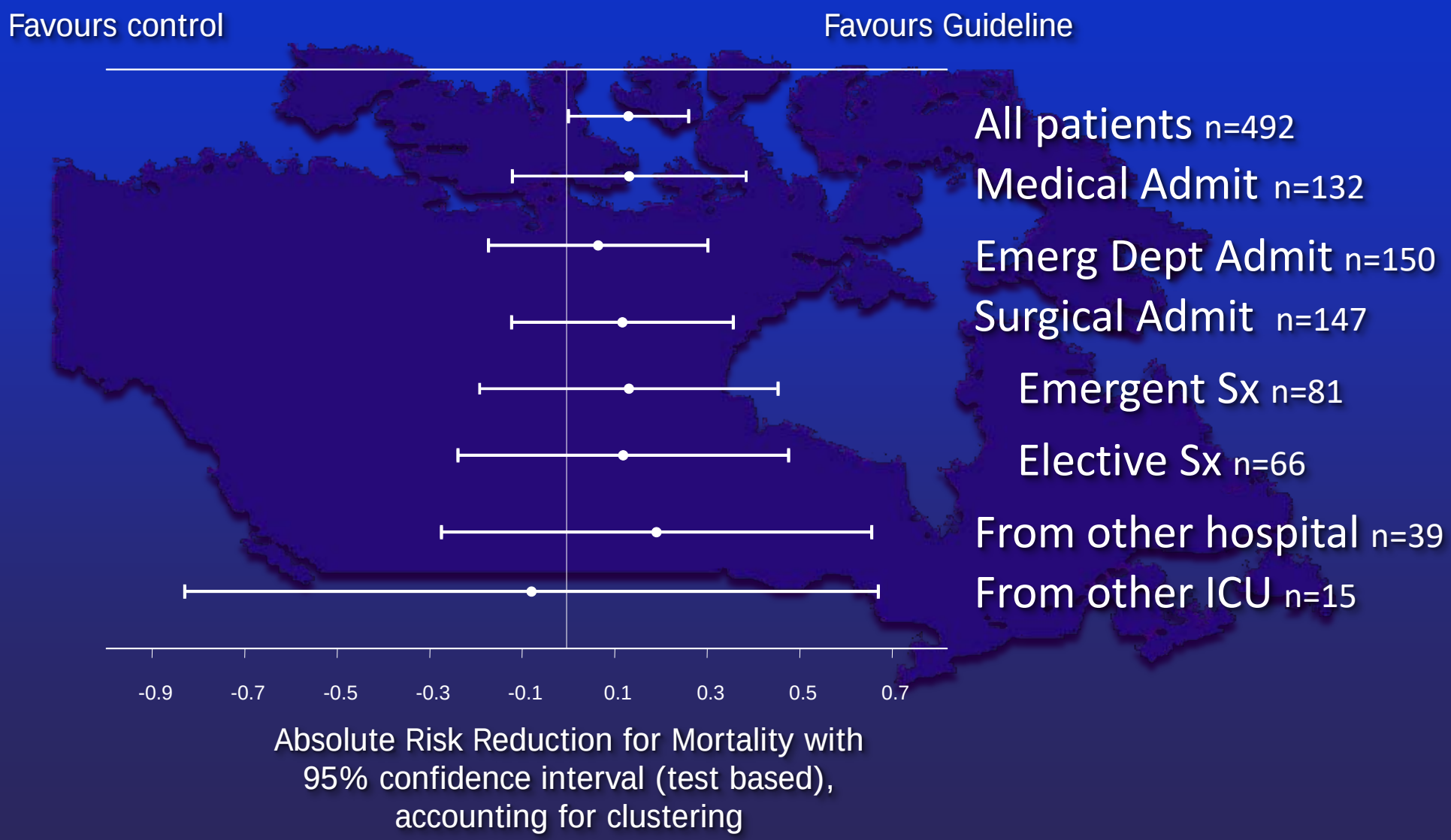
Primary outcomes			
Hospital Mortality	37%	24%	0.047
ICU LOS (days)	11.7	10.8	0.65
Hospital LOS (days)	34.3	25.4	0.006

Mortality by subgroup



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Active implementation of our evidence-based guideline for nutrition therapy in critical illness resulted in improvements in clinical practice:

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These improvements in clinical practice translated to:

- Reduced mortality
- Reduced hospital stay

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$1,000,000 question:

How did we improve practice across a network of 7 hospitals?

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We used change management theory to actively implement our guideline!!

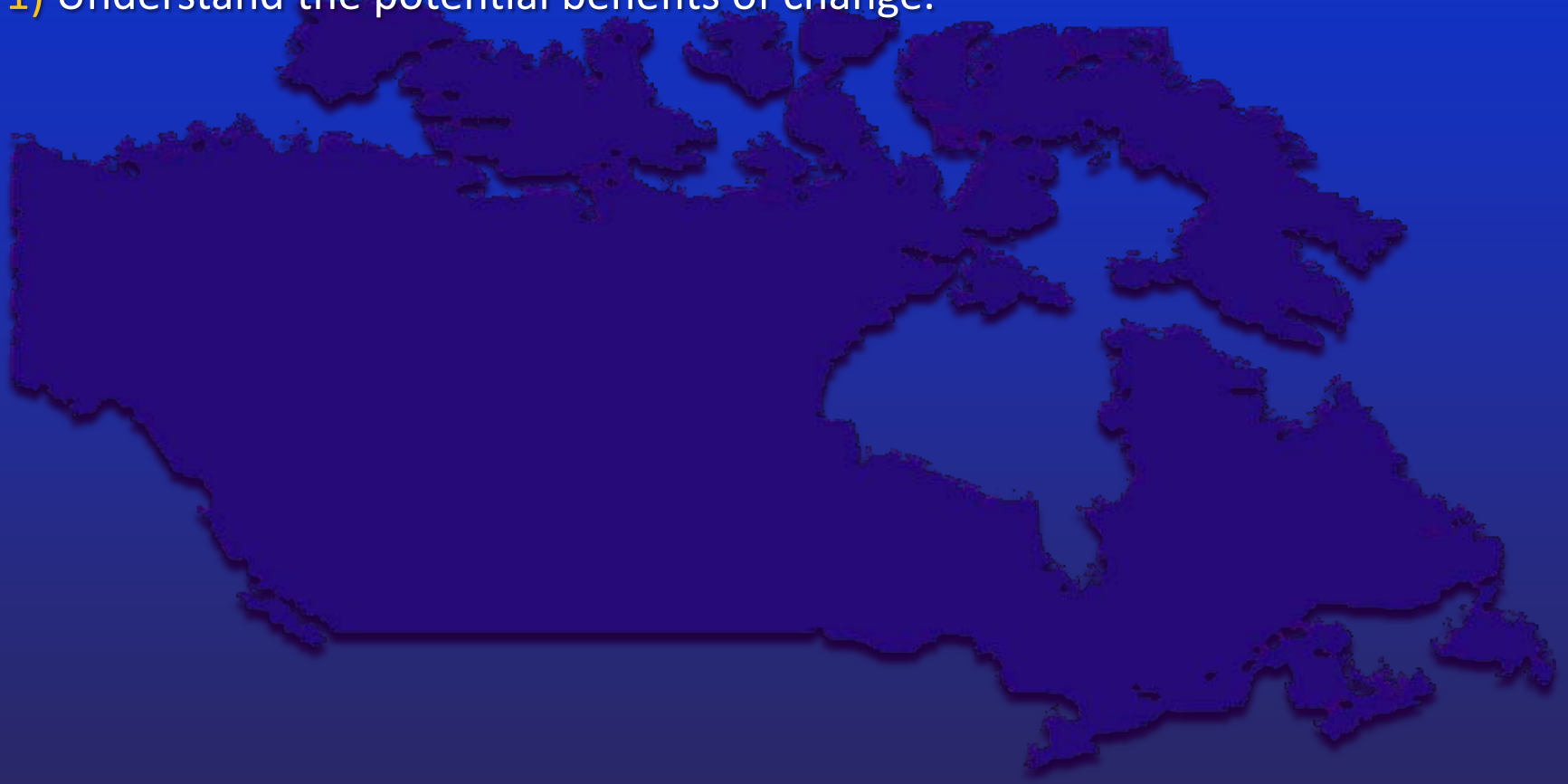
Practice change in the ICU

Change management encompasses a broad set of theories and structured processes aimed at helping to transition *individuals*, *teams* and *organisations* from a current state to a desired future state.

Smith WR. Evidence for the effectiveness of techniques to change physician behavior. *Chest* 2000;118(2) Suppl :8S-17S

Efficient and effective change

1) Understand the potential benefits of change.



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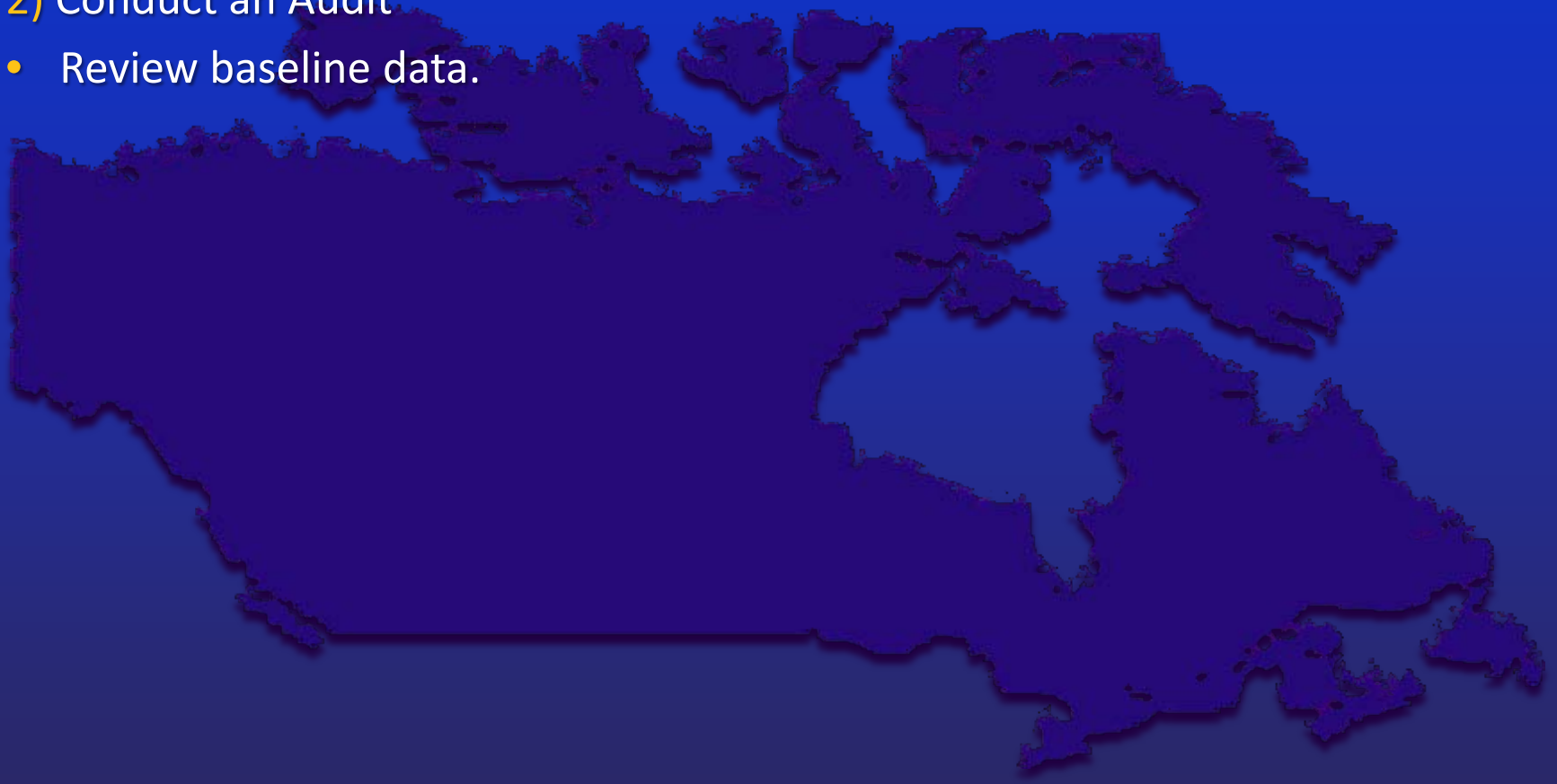
   - Presented the evidence to the user, but also allowed them to read it themselves.
   - Don’t try to change everything at once.
     - *We focussed on the benefits of early EN!*

Efficient and effective change

2) Conduct an Audit

- Review baseline data.



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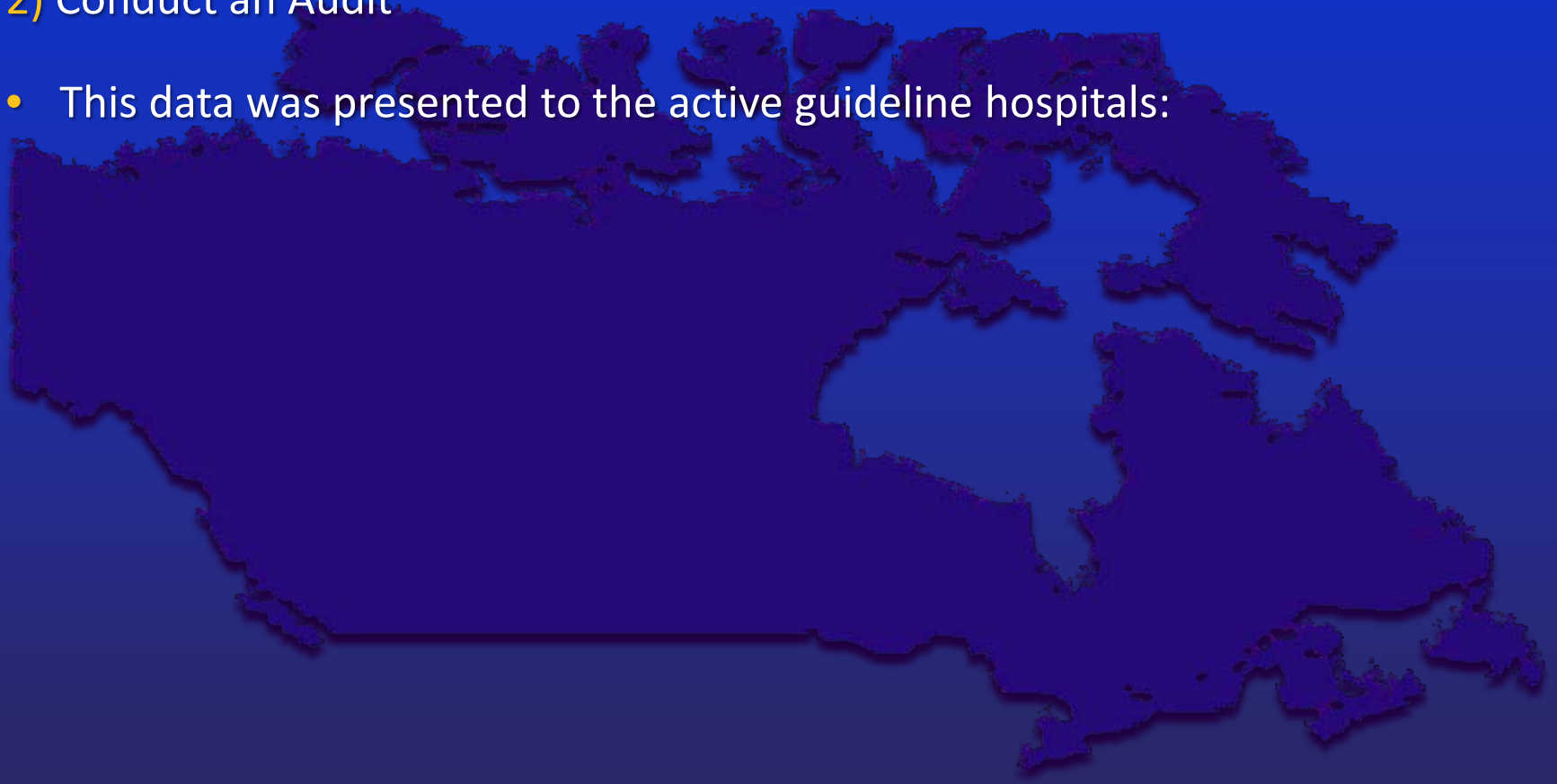

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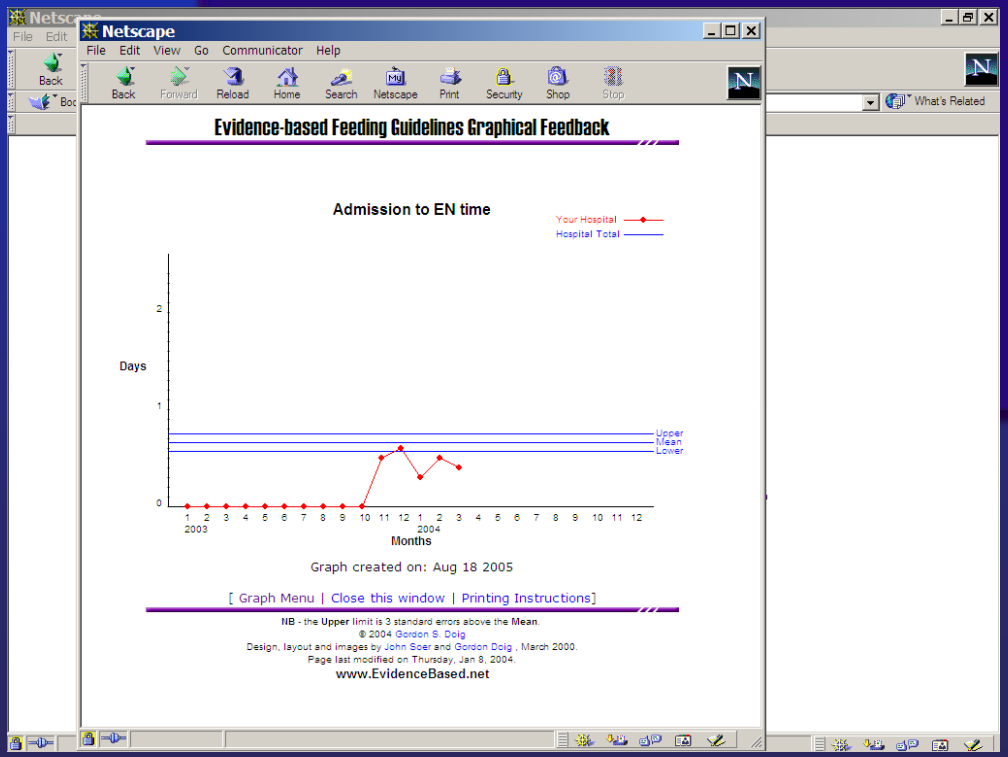

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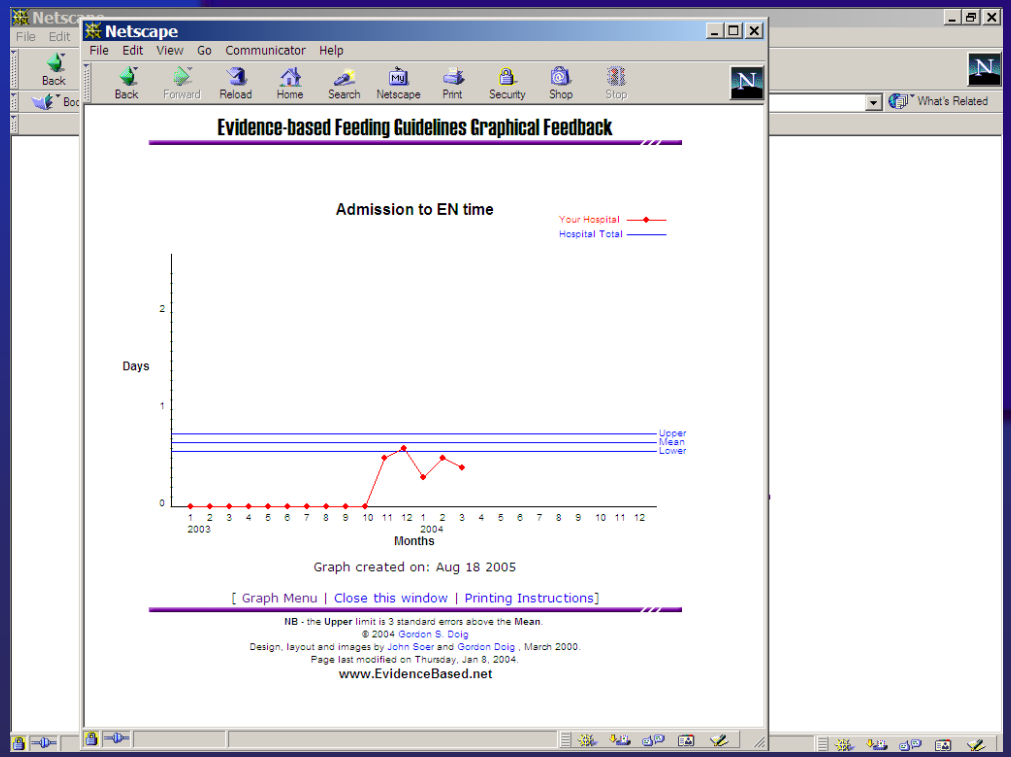

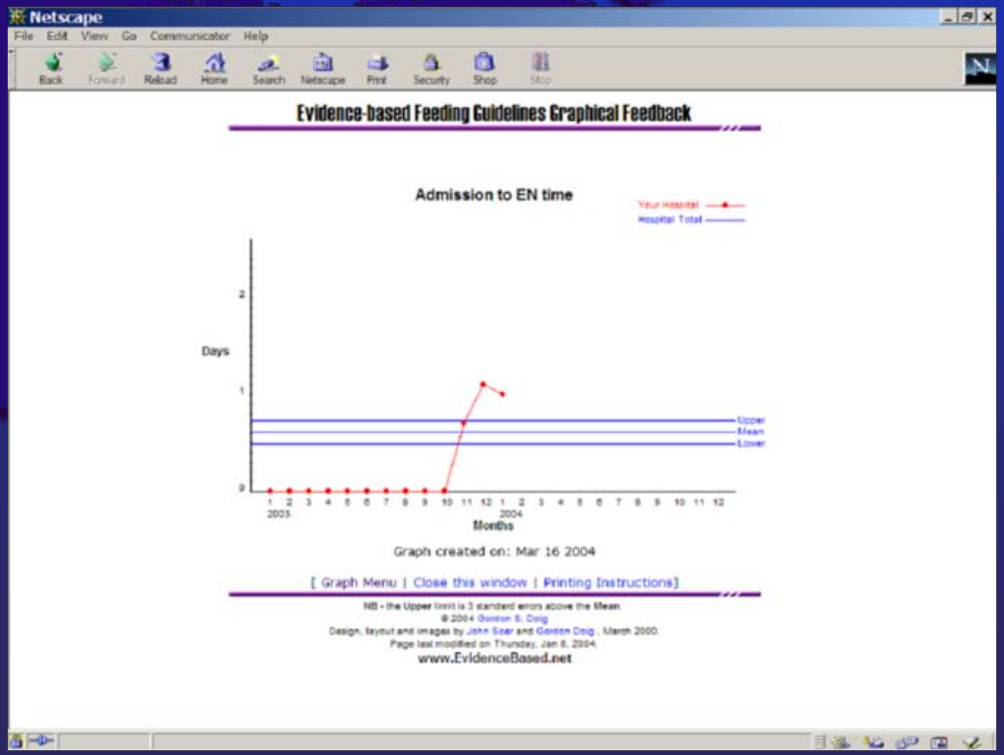

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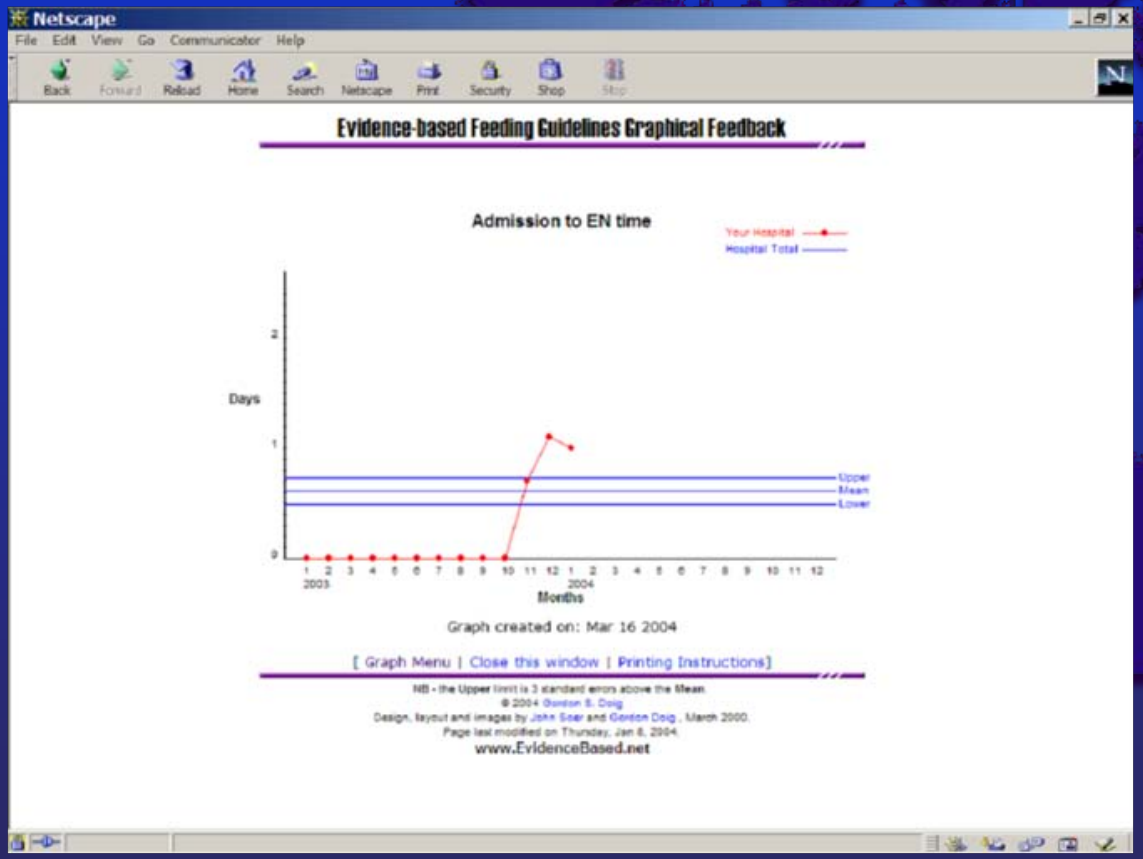

- Promotes awareness of the need for change.
- Allows clinicians to see ‘others’ using the new technology.
- Regarded as being a *moderately strong* motivator for change.

Sinuff T, Cahill NE, Dhaliwal R, Wang M, Day AG, Heyland DK. The value of audit and feedback reports in improving nutrition therapy in the intensive care unit: a multicenter observational study. *J Parenter Enteral Nutr*. 2010 Nov-Dec;34(6):660-8

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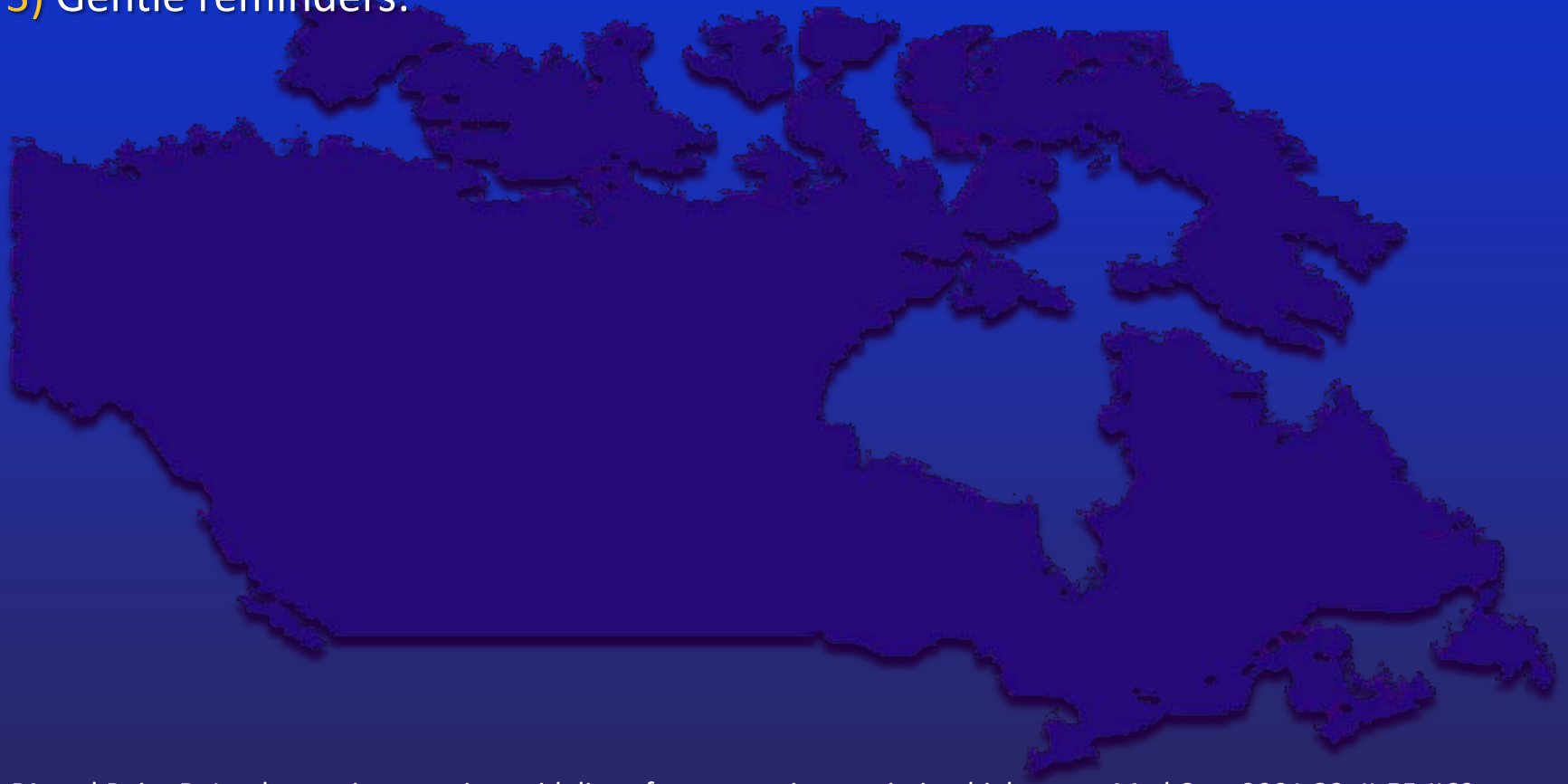

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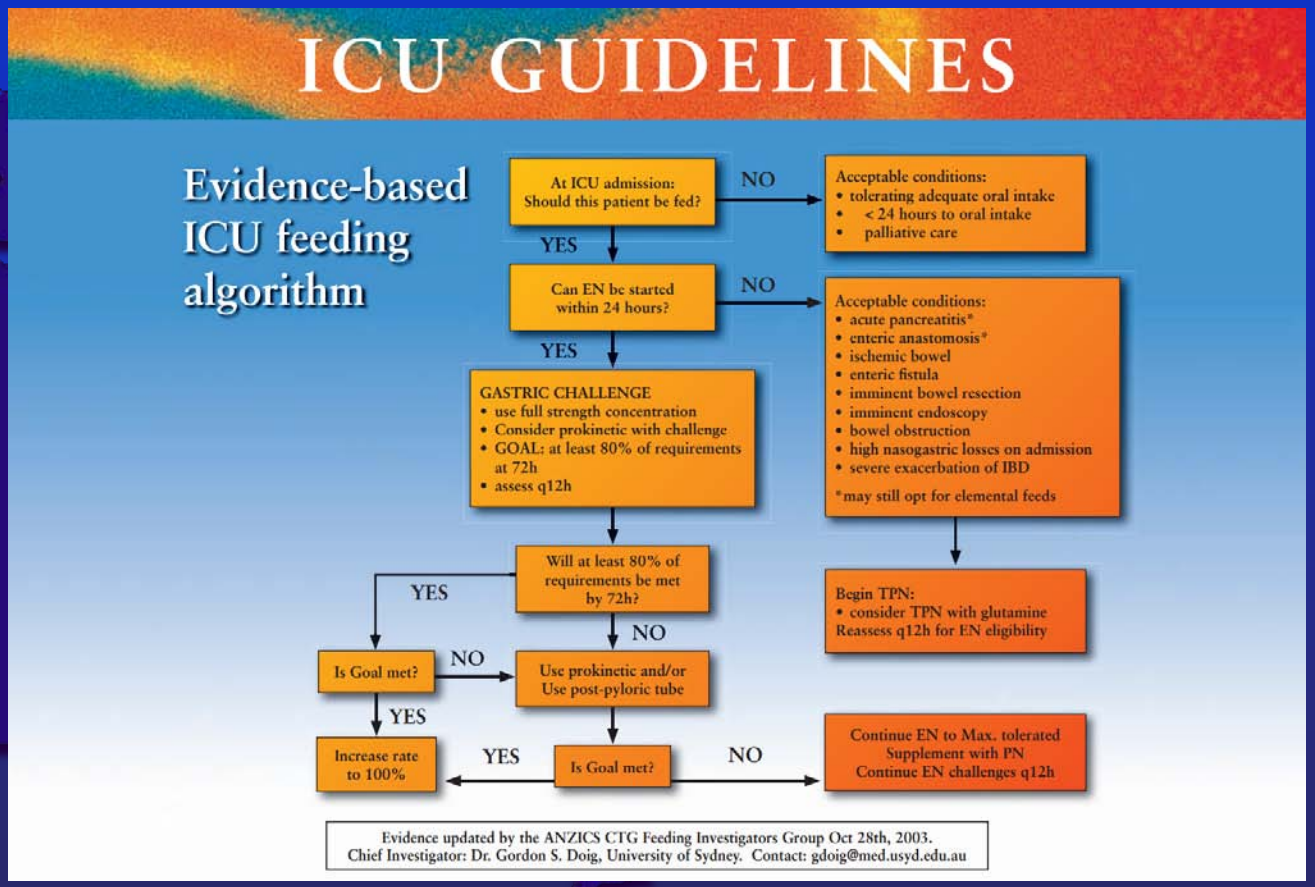

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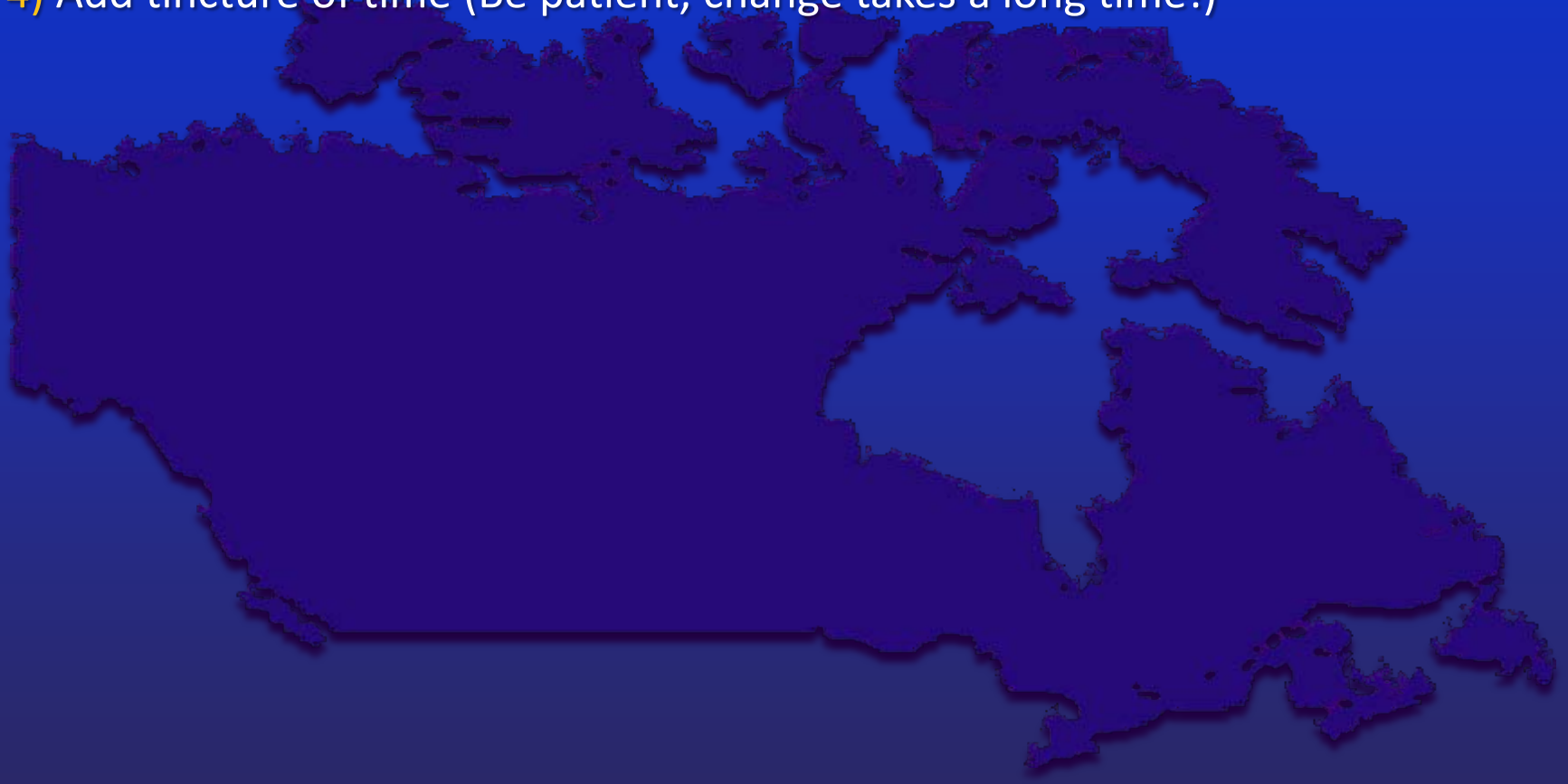

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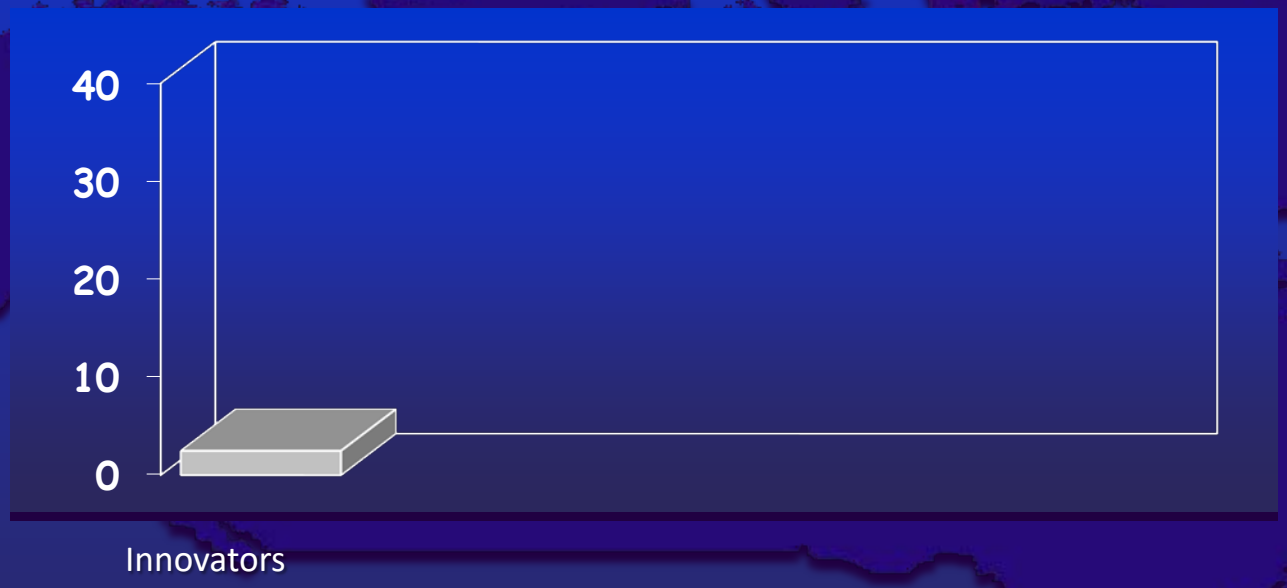

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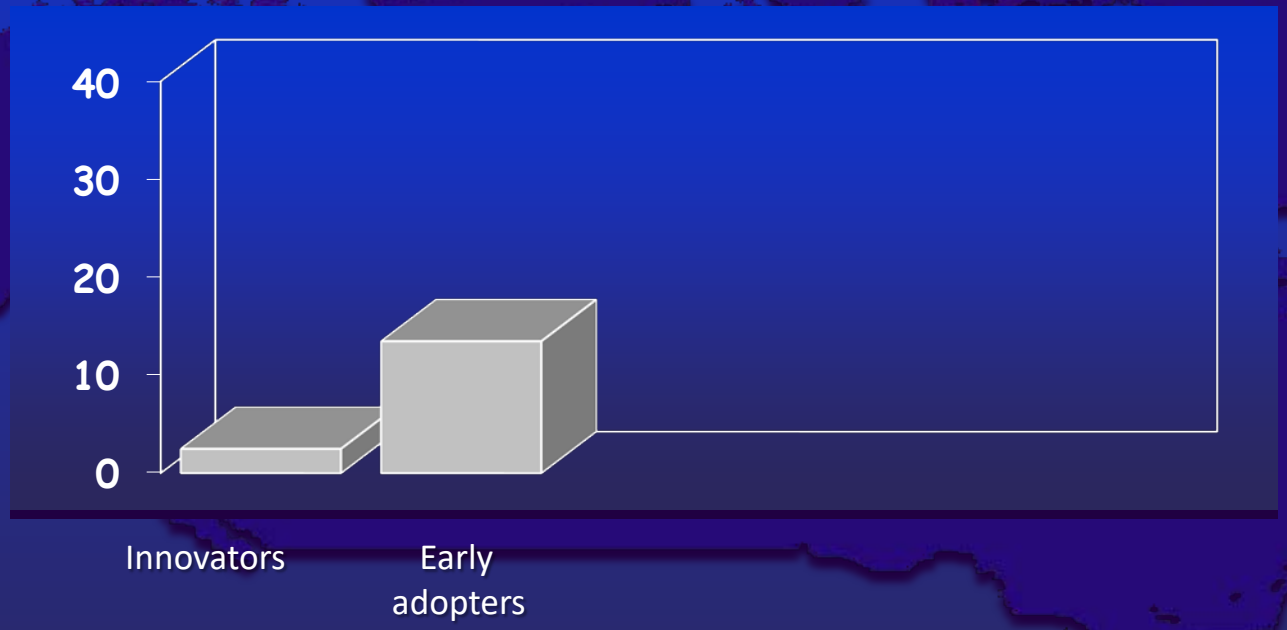

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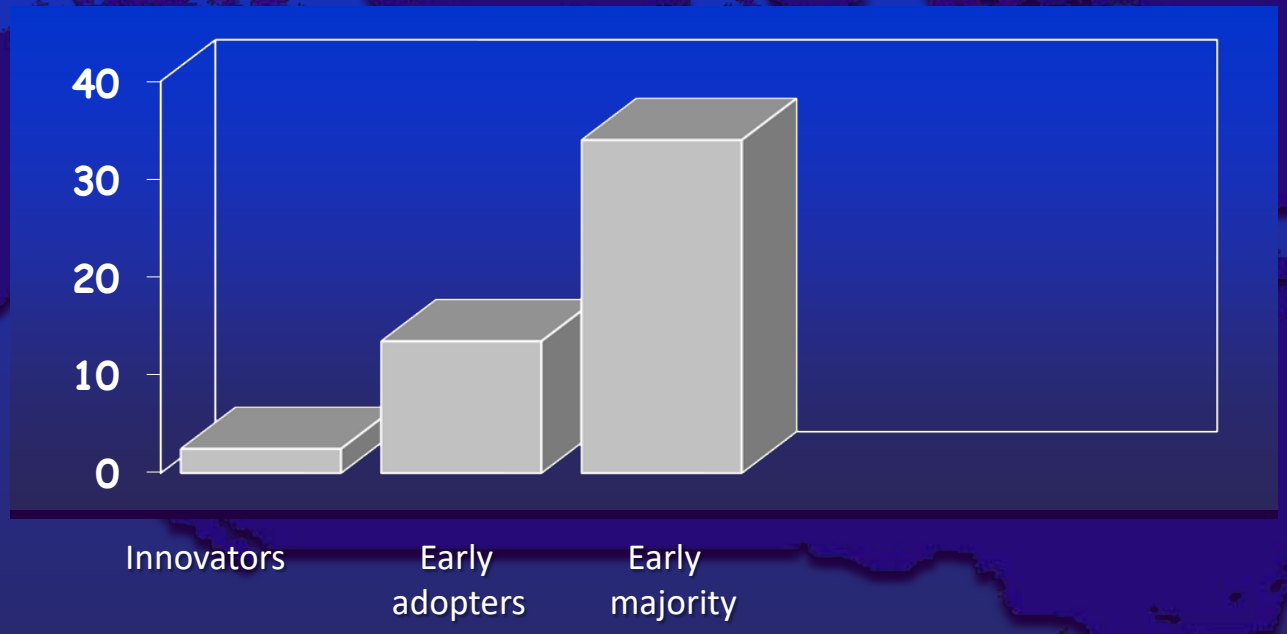

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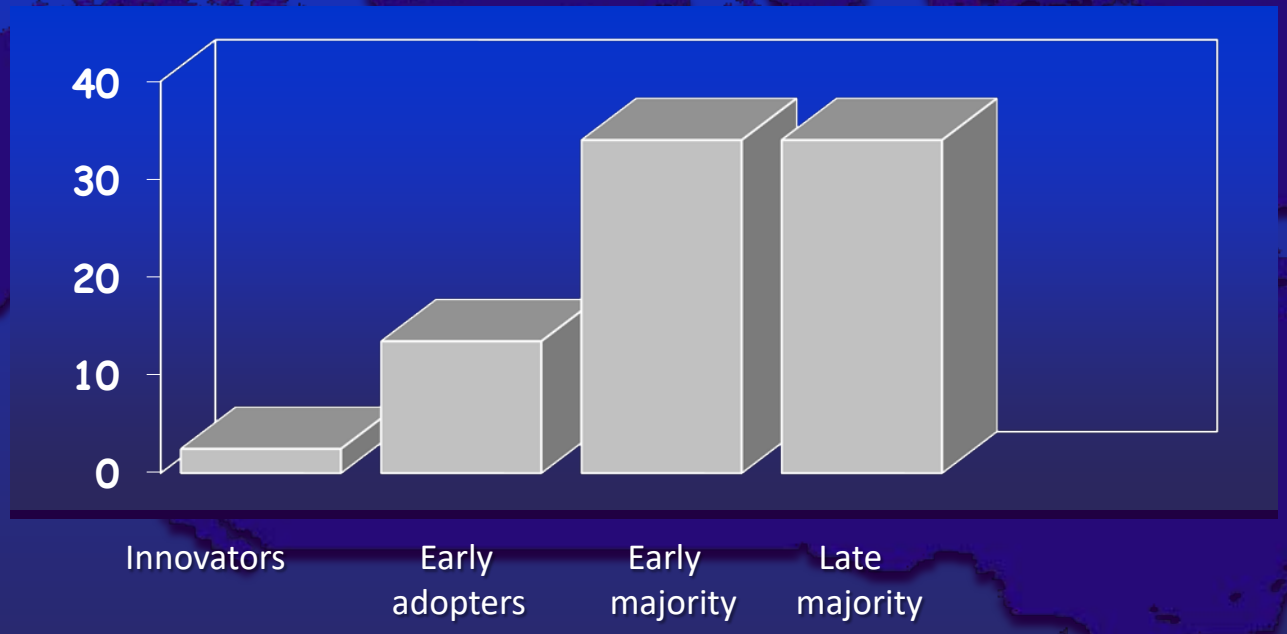

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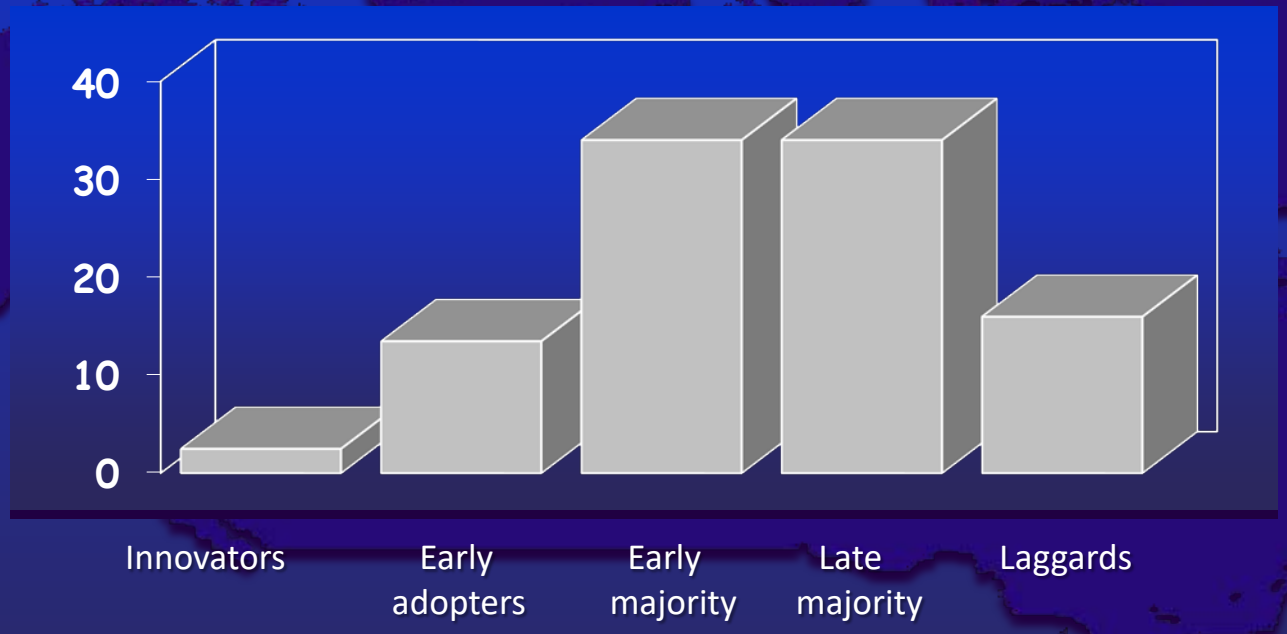

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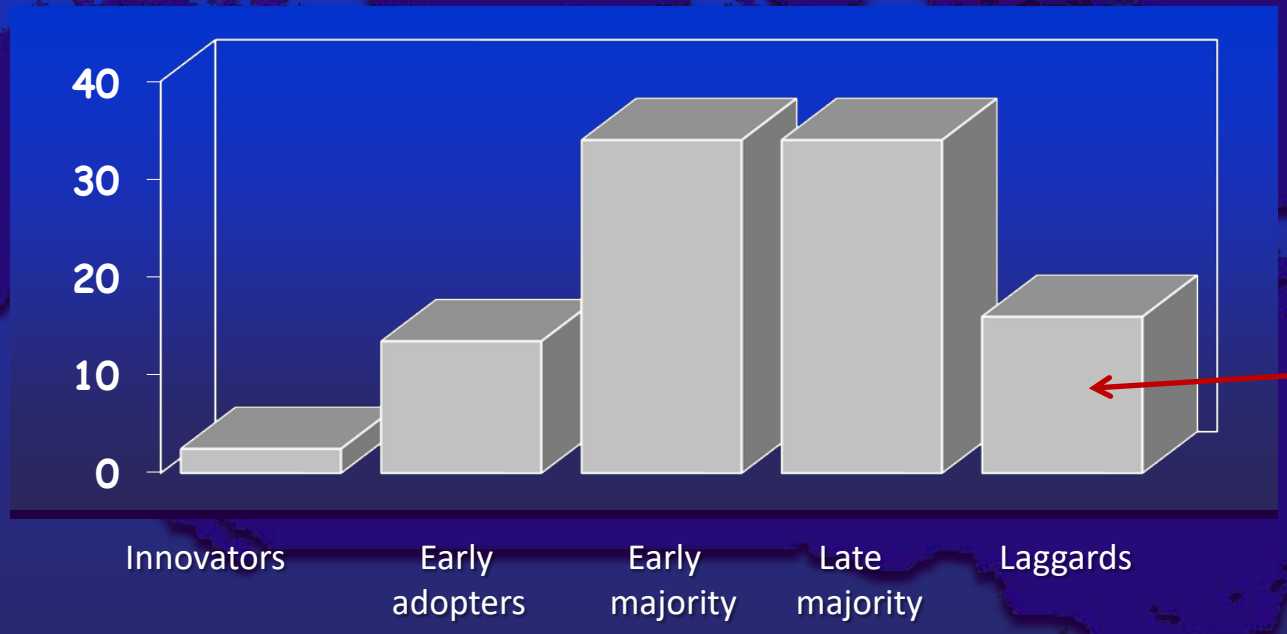
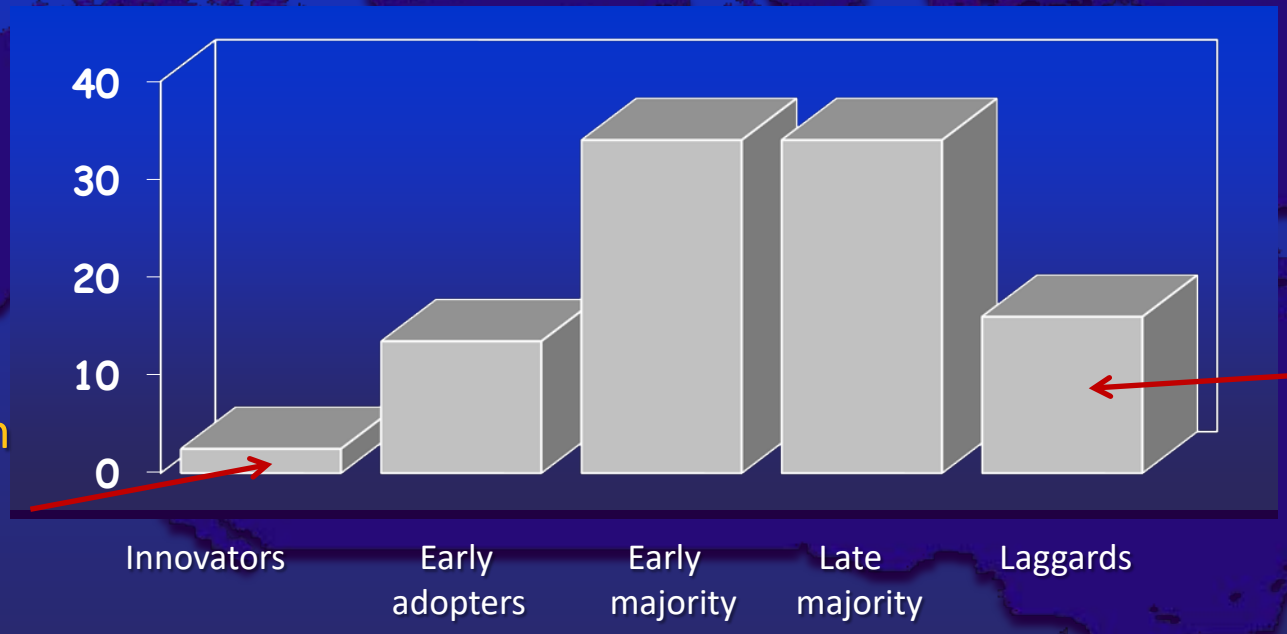


Don't start by *fighting* with these people! They are highly resistant to change!

Rogers EM. Diffusion of innovations. New York: Free Press, 1983.

Efficient and effective change

4) Add tincture of time (Be patient, change takes a long time!)



Start with these people!

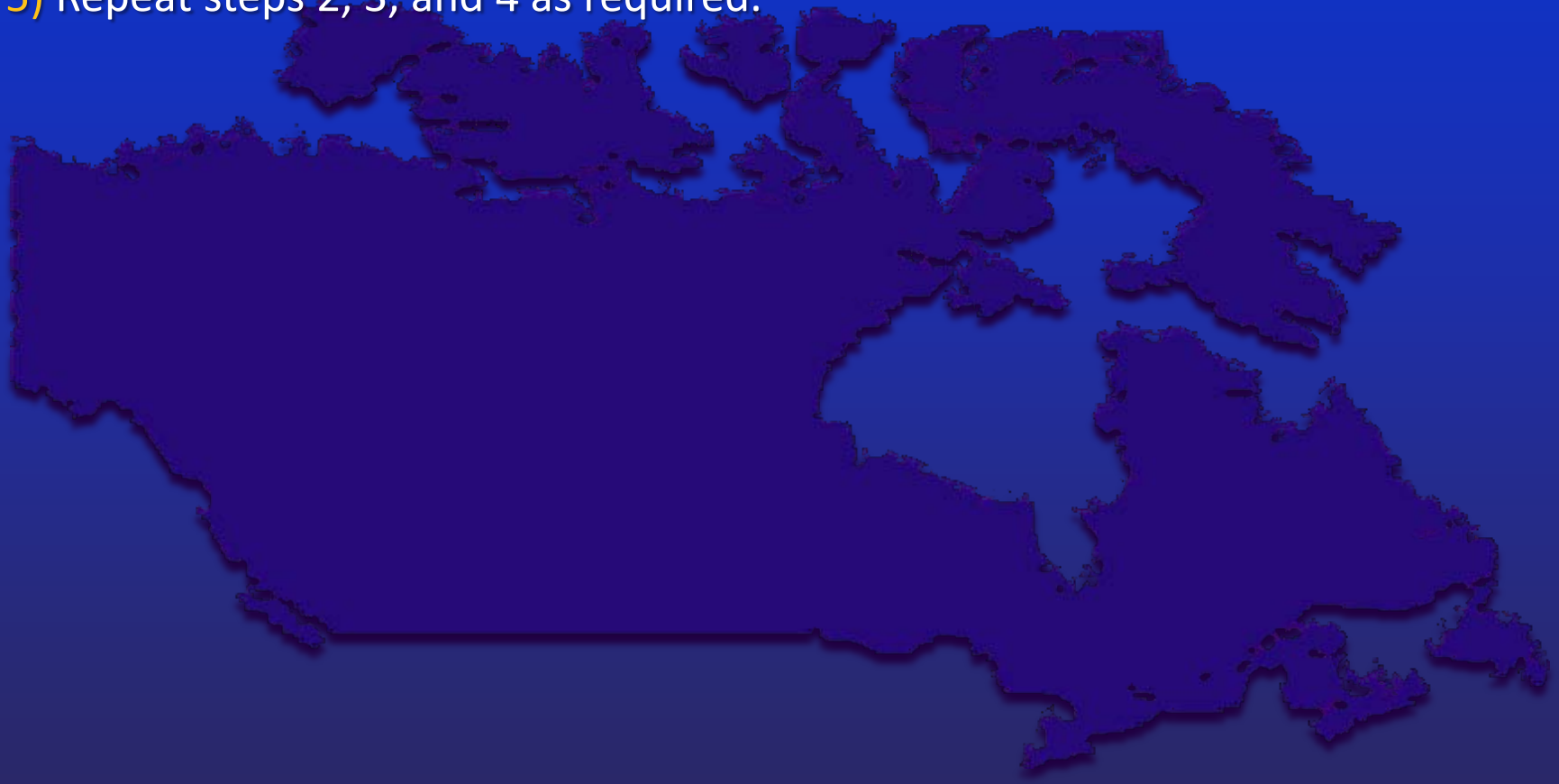
They love change, and will eventually influence everyone else!

Don't start by *fighting* with these people! They are highly resistant to change!

Rogers EM. Diffusion of innovations. New York: Free Press, 1983.

Efficient and effective change

5) Repeat steps 2, 3, and 4 as required.



Simpson F and Doig GS. The relative effectiveness of practice change interventions in overcoming common barriers to change: A survey of 14 hospitals with experience in implementing evidence-based guidelines. *J Eval Clin Pract* 2007 Oct;13(5):709-15.

Efficient and effective change: Recap

1) Understand the evidence

2) Conduct an audit

3) Use gentle reminders.

4) Add tincture of time.

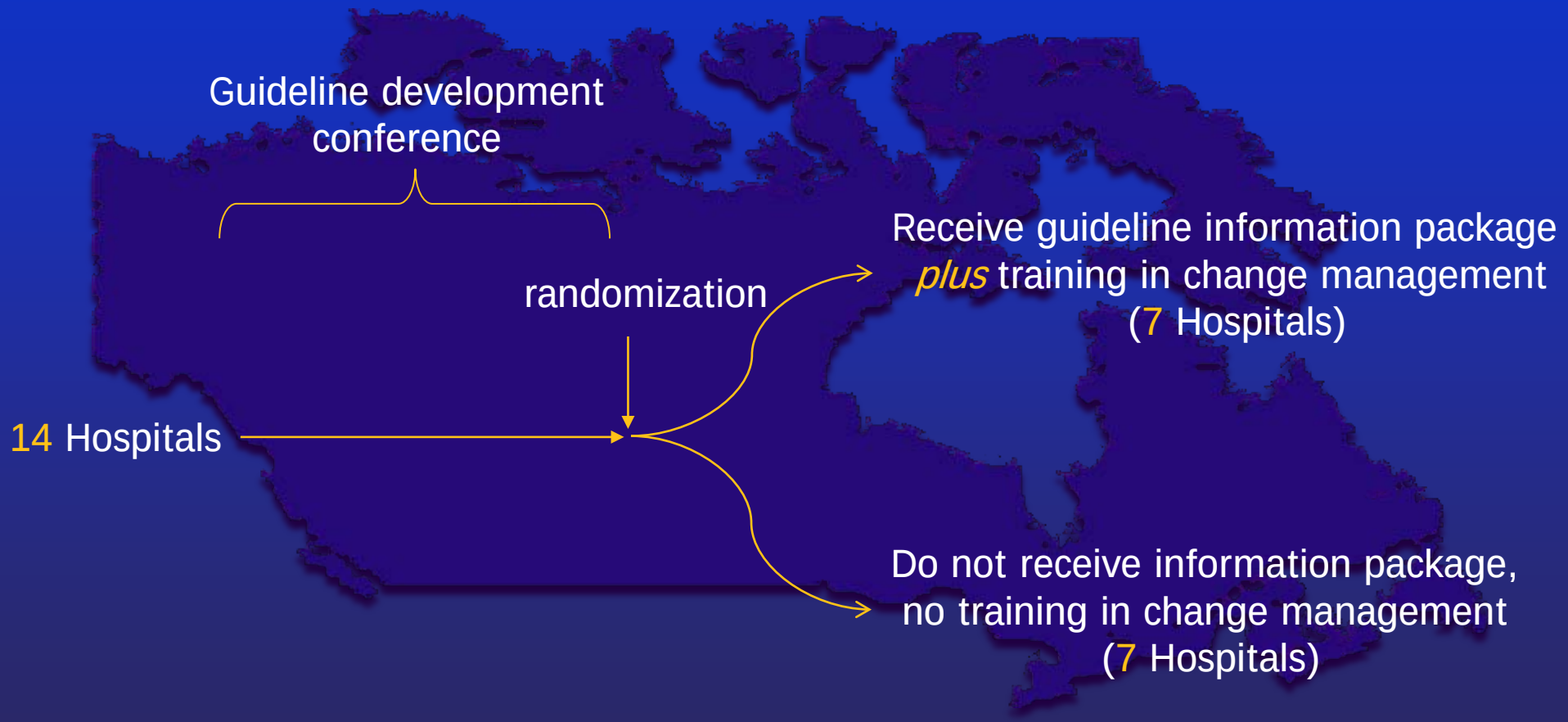
5) Repeat steps 2, 3 and 4 as required.

Simpson F and Doig GS. The relative effectiveness of practice change interventions in overcoming common barriers to change: A survey of 14 hospitals with experience in implementing evidence-based guidelines. *J Eval Clin Pract* 2007 Oct;13(5):709-15.

How to implement a nutrition guideline:
Does knowledge change behaviour?

Dr Gordon S. Doig,
Associate Professor in Intensive Care,
Northern Clinical School Intensive Care Research Unit,
University of Sydney, Sydney, Australia
www.EvidenceBased.net
gdoig@med.usyd.edu.au

ACCEPT Nutrition Guidelines Trial



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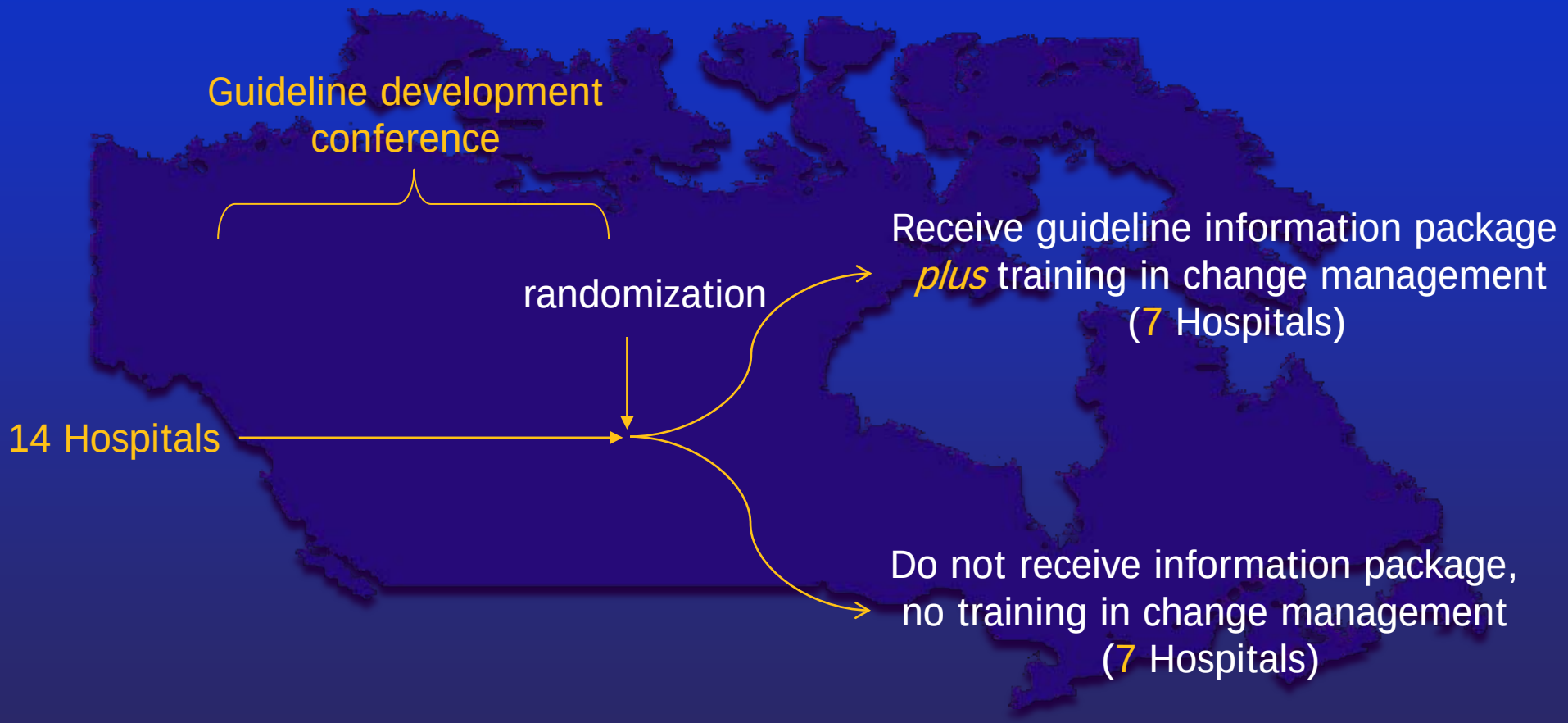
ACCEPT Nutrition Guidelines Trial



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Summary

Active implementation of our evidence-based guideline for nutrition therapy in critical illness resulted in improvements in clinical practice:

- provided EN earlier
- provided EN on more days whilst in the ICU

Evidence supporting benefits from early EN convinced clinicians to start EN earlier.

These improvements in clinical practice translated to:

- Reduced mortality
- Reduced hospital stay

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Questions?

Active implementation of our evidence-based guideline for nutrition therapy in critical illness resulted in improvements in clinical practice:

- provided EN earlier
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Evidence supporting benefits from early EN convinced clinicians to start EN earlier.

These improvements in clinical practice translated to:

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These improvements were achieved by using a relatively simple practice change package.

Simpson F and Doig GS. The relative effectiveness of practice change interventions in overcoming common barriers to change: A survey of 14 hospitals with experience in implementing evidence-based guidelines. *J Eval Clin Pract* 2007 Oct;13(5):709-15.

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Summary

- Early EN is a dominant technology: It improves health outcome and reduces costs!!
- EN should begin within 24 h of ICU admission, as soon as shock is stabilised:
  - Shock Index ≤ 1 (Heart rate / SBP) for one hour or
  - SBP > 100 mmHg without need for *increasing* doses of vasoactive agents for one hour.

Stable shock is not defined by weaning or removing all vasoactive agents.

Doig GS, Heighes PT, Simpson F, Sweetman EA and Davies AR. Enteral nutrition within 24 h of ICU admission significantly reduces mortality: A meta-analysis of RCTs. *Intensive Care Medicine* 2009 Dec;35(Issue 12):2018-2027.

Doig GS, Chevrou-Severac H and Simpson F. Early enteral nutrition in critical illness: A full economic analysis using US costs. *ClinicoEconomics and Outcomes Research* **2013**;5:429-436.

Immediately after resuscitation:

Stable shock can be defined as:

Shock Index ≤ 1 (heart rate ÷ systolic blood pressure = Shock Index)

or

Systolic blood pressure > 90 mmHg **or** mean blood pressure > 70 mmHg for at least one hour.

Doig GS and Heighes PT. A Change Management Perspective on a Novel Meta-Analysis: Early Enteral Nutrition in Trauma Patients. *ICU Management Forum*, 2011;11(3):26-29.

Canadian vs Australian cRCT

Doig GS, Simpson F, Finfer S, Delaney A, Davies AR, Mitchell I and Dobb G for the Nutrition Guidelines Investigators of the ANZICS Clinical Trials Group. Effect of evidence-based feeding guidelines on mortality of critically ill patients: a cluster randomized controlled trial. ***JAMA*** 2008 Dec 17;300(23):2731-41.

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Canadian vs Australian cRCT

	Control Hospitals		Guideline Hospitals
Admit to EN	2.2		1.6
	1.4	days	0.8

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Canadian vs Australian cRCT

	Control Hospitals		Guideline Hospitals
Admit to EN	2.2		1.6
	1.4	days	0.8
Admit to any feed	1.9		1.5
	2.1	days	0.9
EN delivered	5.4		6.7
	5.8	days fed / 10 ICU days	7.2
EN or TPN delivered	6.9		8.5
	6.9	days fed / 10 ICU days	8.1
Energy delivered	999		1257
	1065	kcal/ICU day	1241
% of patients never fed	25%		10%
	28%		6%

Doig GS, Simpson F, Finfer S, Delaney A, Davies AR, Mitchell I and Dobb G for the Nutrition Guidelines Investigators of the ANZICS Clinical Trials Group. Effect of evidence-based feeding guidelines on mortality of critically ill patients: a cluster randomized controlled trial. ***JAMA*** 2008 Dec 17;300(23):2731-41.

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Multifaceted practice change strategy

1) Academic detailing
2) Educationally influential opinion leaders
3) Local consensus process
   - local champions
4) Reminders (manual or computerized)
   - active ongoing bedside reminder system
   - educational materials
5) Audit and feedback
   - computer generated, timely
   - should be delivered by peers or opinion leaders
6) Educational outreach process
   - didactic lecture based CME (conferences, lectures)
7) Unsolicited mail
   - educational materials

Simpson F and Doig GS. The relative effectiveness of practice change interventions in overcoming common barriers to change: A survey of 14 hospitals with experience implementing evidence-based guidelines. *J Eval Clin Pract* 2007;13:709-715.