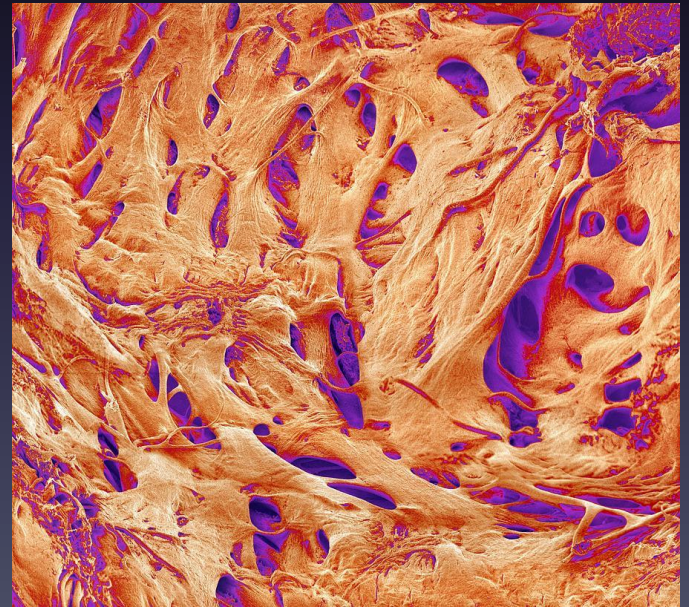
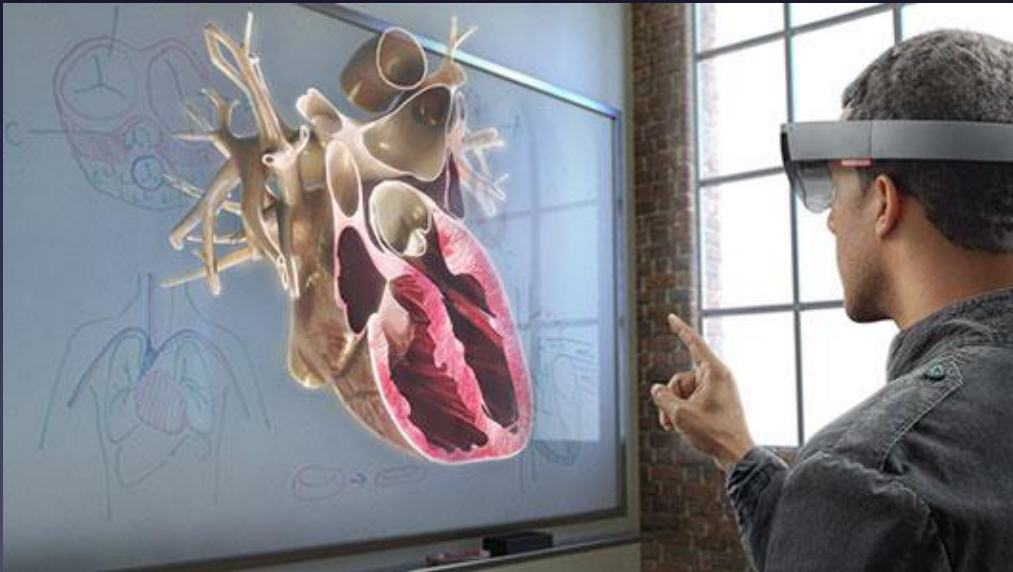
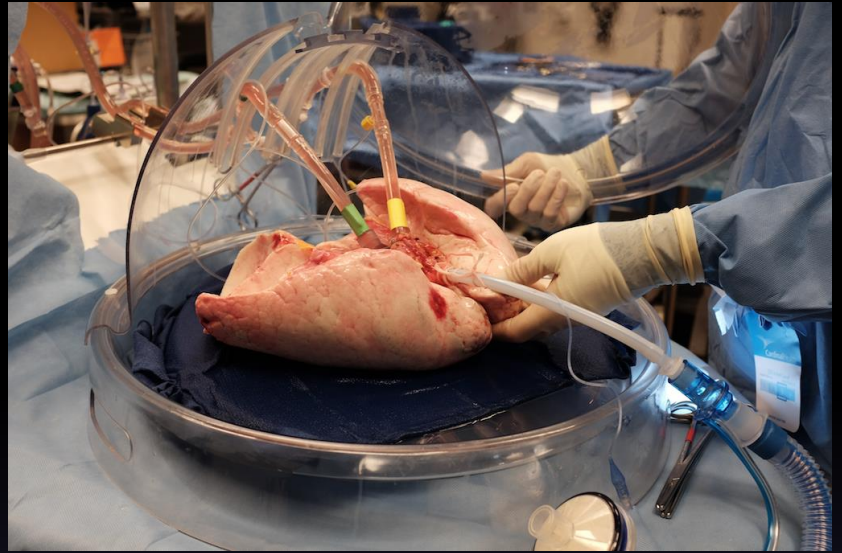




What is Happening ?

Bradley Chesham  
Prince Charles Hospital,  
Brisbane, Queensland Australia





# What is weaning ?

- Process of liberating or discontinuing mechanical ventilation



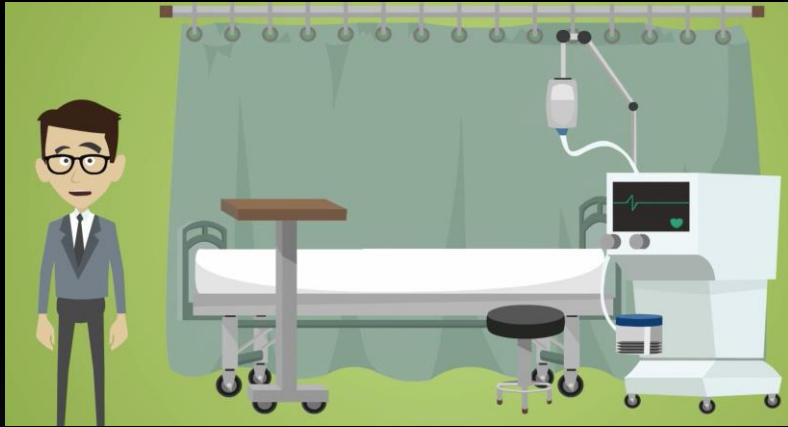
# Also Recently liberated



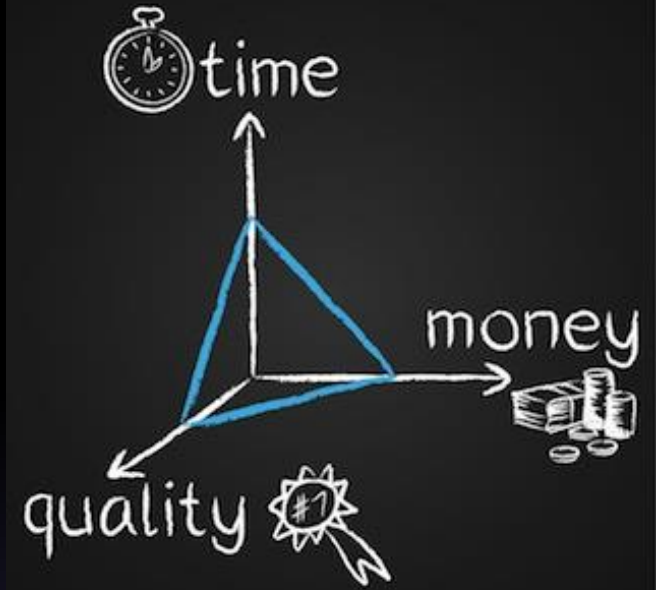
Mosul, Iraq



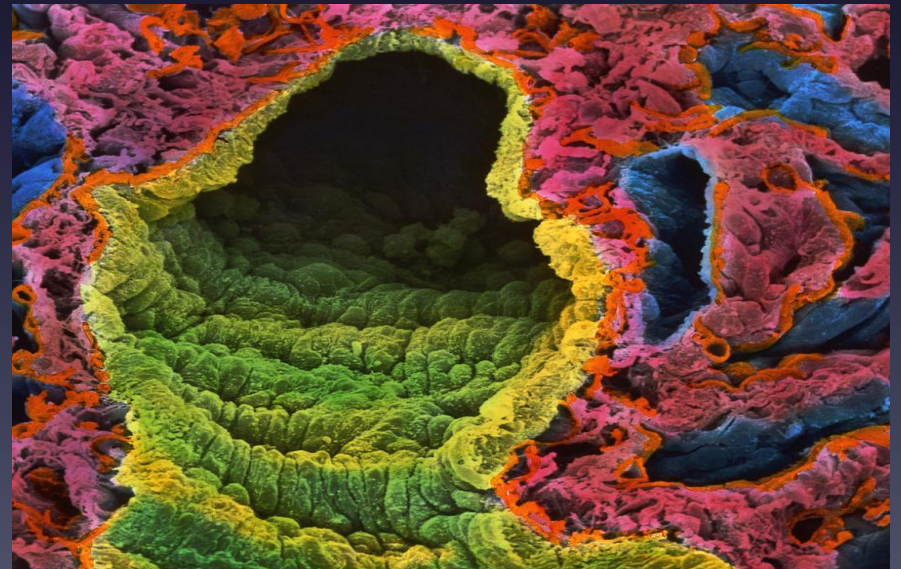
But we must not digress ...



But what is weaning ?



40 % of the time spent on your mechanical Ventilator



# A couple of facts from across the pond

- 790,257 hospitalizations involving mechanical ventilation in **2005**, representing 2.7 episodes of mechanical ventilation per 1000 population; estimated national costs were **\$27 billion** representing 12% of all hospital costs.
- Daily incremental cost of mechanical ventilation for ICU patients is estimated at between \$600 and \$1500 per day

American Association for the Surgery of Trauma



# What is Automated Ventilation and how does it help with weaning?

You can't be broke if you don't check your bank account

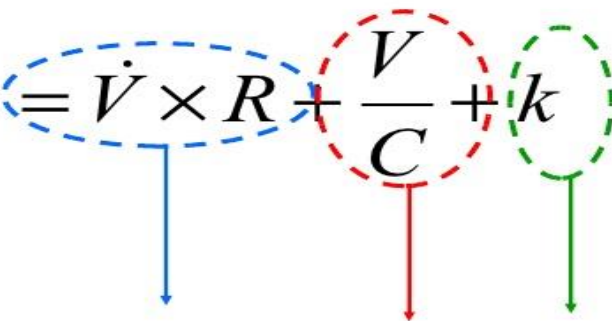


# Automated Ventilation

Now, we know Nurses love math, right ?

Equation of motion is .....

Equation of motion

$$P_{rs} = P_{ao} = \dot{V} \times R + \frac{V}{C} + k$$
The diagram shows the equation  $P_{rs} = P_{ao} = \dot{V} \times R + \frac{V}{C} + k$ . The term  $\dot{V} \times R$  is enclosed in a blue dashed oval, with a blue arrow pointing down to  $P_{res}$  in the equation below. The term  $\frac{V}{C}$  is enclosed in a red dashed oval, with a red arrow pointing down to  $P_{el}$  in the equation below. The term  $k$  is enclosed in a green dashed oval, with a green arrow pointing down to  $P_{eepi}$  in the equation below.

$$P_{rs} = P_{ao} = P_{res} + P_{el} + P_{eepi}$$



Let's talk systematic reviews,  
Let's talk gambling

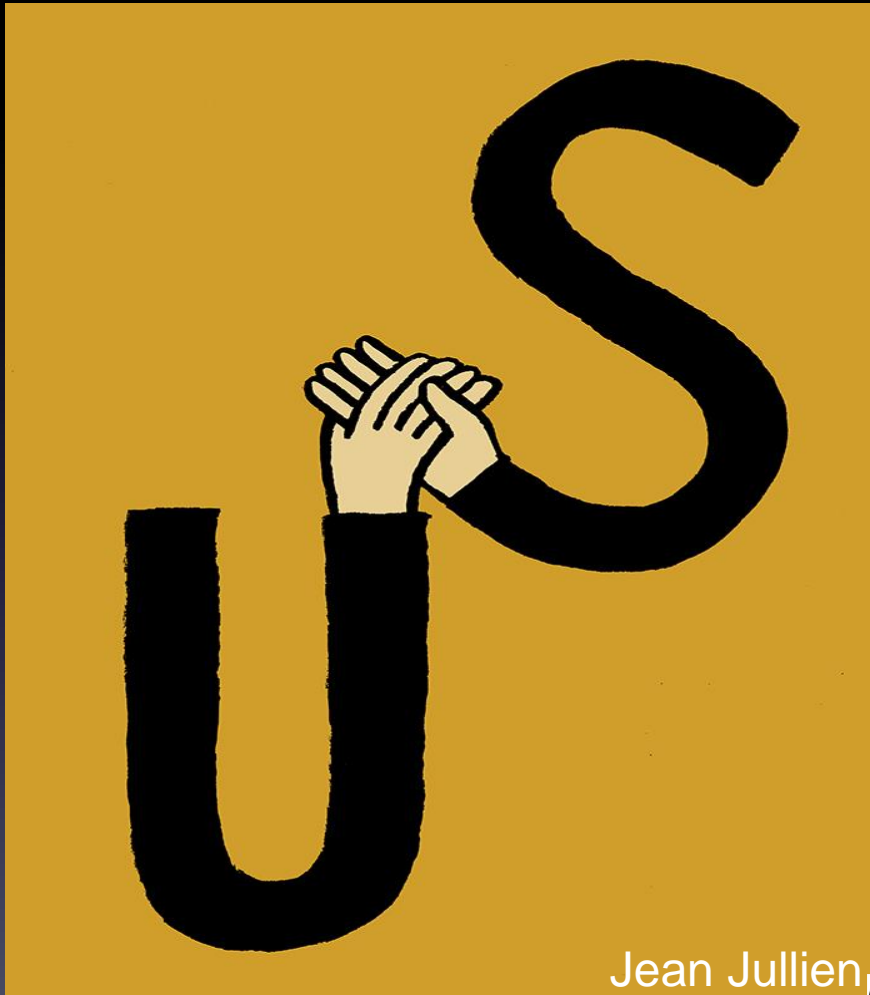




# Systematic review



# “All of Us” Study



It also explores whether targeted education and support should be developed for non-clinical staff who are either directly or indirectly involved in intensive medical scenarios

Jean Jullien ©



# Develop Research Question

- Are Nursing led mechanical ventilation weaning protocols evolving with new automated mechanical ventilation weaning strategies ?

# Aims

- 1. Compare automated weaning against protocol based weaning
- 2. Understand how nurses are getting involved

# Methodology

- Search methods for study Identification
- Criteria for study consideration
  - Inclusion Criteria
  - Exclusion Criteria
  - Participants
  - Defining the Intervention
  - Cultural and Linguistic range
  - Validity
  - Data Collection and extraction



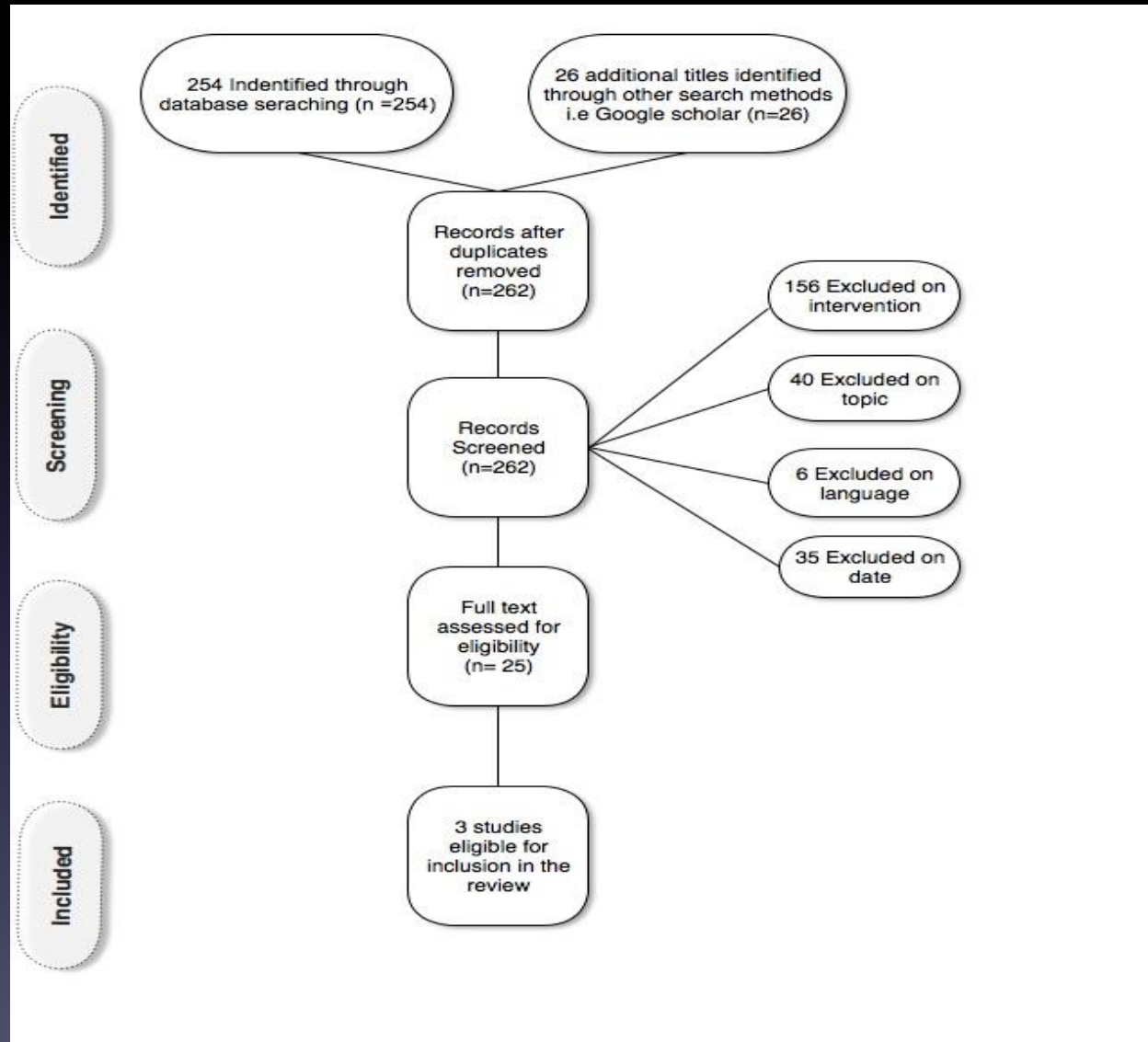
# Included Studies

<b>Author</b>	<b>Title of study</b>	<b>Publication Year</b>	<b>Setting</b>	<b>Number enrolled</b>
Burns, et al,	Wean Earlier and Automatically with NEW technology (The WEAN Study)	2013	9 various ICU centres across Canada	92
Liu et al,	<b>Computer driven automated weaning reduces weaning duration in difficult to wean patients</b>	2013	<b>One single centre in China</b>	<b>48</b>
Lellouche et al,	A Multicentre Randomized Trial of Computer driven Protocolized weaning from Mechanical Ventilation.	2006	5 various ICU centre across France, Switzerland, Belgium and Spain	144

# Assessing quality

- Risk of Bias across studies
- Selection Bias
- Performance bias
- Detection bias
- Attrition bias
- Study publication bias
- Reporting bias
- Sample size
- Ethics

# Everyone loves a good flow chart





# Results

- Exploring Heterogeneity
  - Decision to extubate
  - Varied staffing levels
  - Alternating workloads
  - Compliance to local protocols
  - Presence of mild to high bias within studies (along with attrition rates of 5-15% within studies)

# Results

	<b>Random sequence generation</b> (Selection bias)	<b>Allocation concealment</b> (Selection bias)	<b>Blinding of outcome assessment</b> (Detection bias)	<b>Incomplete outcome data</b> (Attrition bias)	<b>Selective reporting</b> (Reporting bias)	<b>Other bias - Sponsorship bias</b>
Burns 2013	+	+	?	?	+	+
Liu 2013	+	-	?	?	+	+
Lellouche 2006	+	+	?	?	+	-

# Results

- 1) Benefits of computer driven automated weaning ?
- What is your postcode ? ..



# Results

- 2) How are nurses getting involved?

# Strengths and weaknesses

- Quality of initial search processes inclusive of screening and exclusion of irrelevant studies and data
- Lack of evidence
- Novice researcher



# Understanding the change



**OK...**



**NOW WHAT?**



# Questions ...

- & Thank you..