

# Glycemia control and neurological outcome in Intensive Care

## INTENSIVE vs MODERATE INSULIN THERAPY

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### INTRODUCTION

The NICE-sugar investigation demonstrated that an Intensive Insulin Therapy, had an increased risk of severe hypoglycemia.

However, there is evidence that an Intensive Insulin Therapy may improve the neurological outcome of critically ill patients, as well as their overall rehabilitation process.

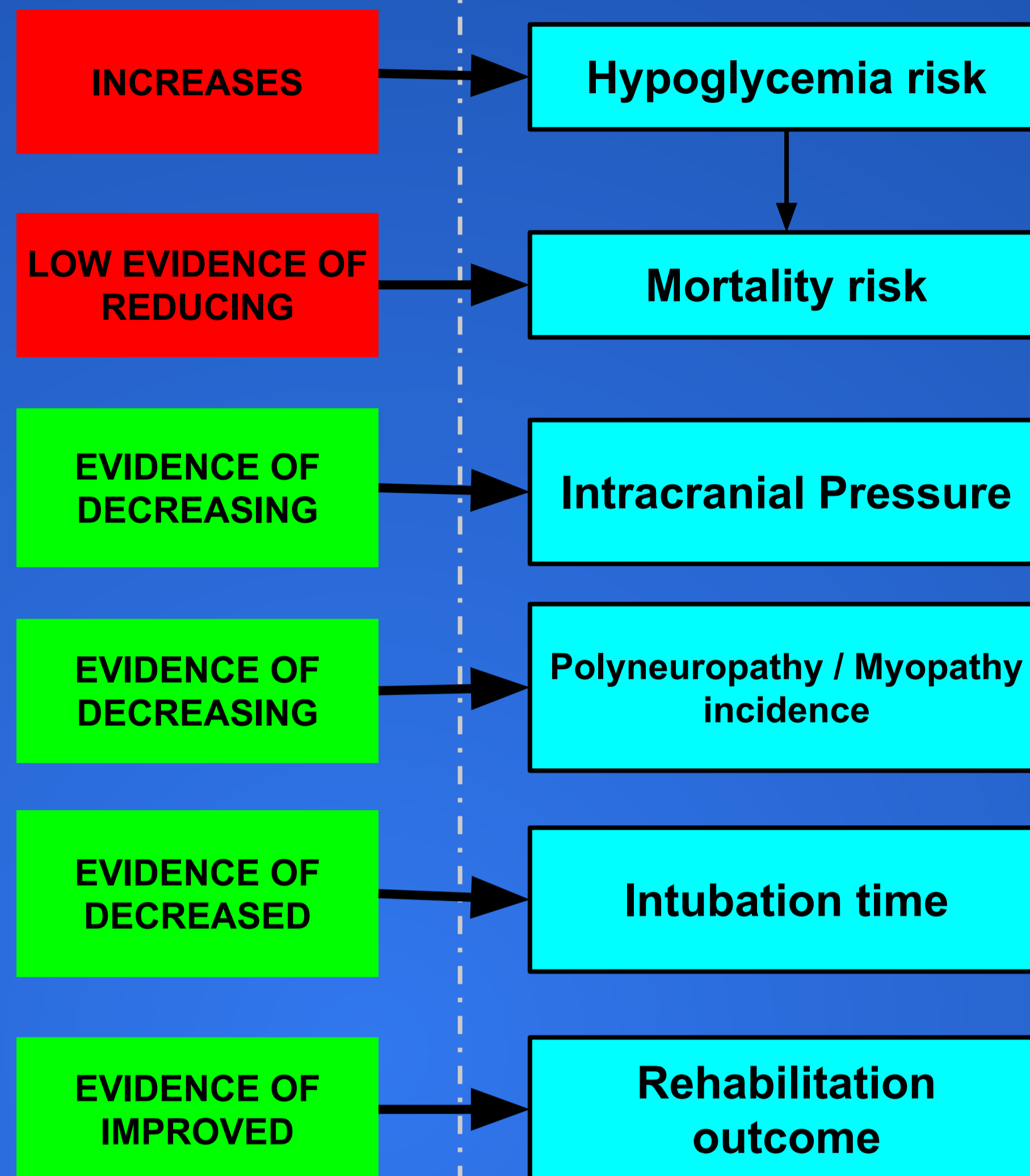
**Does that benefit overcome the risks associated with IIT?**

To evaluate the risks and benefits of IIT vs MIT a literature review was done. The main points reviewed were:

- Hypoglycemia incidence.
- Mortality risk.
- Neurological outcome
- Rehabilitation outcome

### INTENSIVE INSULIN THERAPY

Objective glycemia: 4-6 mmols/l



### MODERATE INSULIN THERAPY

Objective glycemia: <10 mmols/l

### KEY CONCEPTS

- **Polyneuropathy:** Neural disorder associated to critical illness, especially in septic and multiple organ failure patients. It causes limb weakness and it is associated with increased intubation time and mortality risk.
- **Myopathy:** Muscular fibre damage that causes weakness and requires rehabilitation. It often coexists alongside polyneuropathy. It is associated with an increased intubation time and worse rehabilitation outcome.
- **Intubation time:** Time required to successfully extubate after intubation.
- **Intracranial pressure:** Pressure inside the skull. If it is elevated it can lead to brain damage of various degrees, coma or death.
- **Rehabilitation outcome:** Time required to restore patient's independence and back to his normal life, if possible, as well as the degree of success.

### RESULTS

The results were consistent with the risks identified by the NICE-sugar trial. Using an Intensive Insulin Therapy implies an increased risk of hypoglycemia, which can lead to various degrees of harm or to the death of the patient.

Most authors identified the increased nursing workload associated with the Intensive Insulin Therapy.

At this point, a **Moderate Insulin Therapy approach is safer, and should continue to be implemented.**

### IN THE FUTURE...

Due to the limitations of glycaemia monitoring, the use of an Intensive Insulin Therapy supposes a high increase of nursing workload, as well as a proven increased risk of severe hypoglycemia and its associated death.

This fact has limited the possibility of doing further and more detailed research regarding the benefits of IIT vs MIT in the Intensive Care setting.

As newer technologies are developed to improve monitoring and better mimic the pancreas function, it may become safer to further investigate the Intensive Insulin Therapy approach. This will allow for safer studies of its benefits on critical care patients.