

IROI Study: Intra-abdominal hypertension afflicts 50% of ICU patients



The Incidence, Risk Factors, and Outcomes of Intra-Abdominal Hypertension in Critically Ill Patients (IROI) Study is the first prospective multicentre observation on prevalence, risk factors, and outcome of intra-abdominal hypertension (IAH) among the consecutive patients admitted to the ICU. Results show that nearly half of all patients admitted to the ICUs worldwide developed IAH and that two thirds of those cases were already present on the day of ICU admission.

IAH may lead to organ dysfunction and abdominal compartment syndrome (ACS). However, research findings are conflicting as to whether IAH is independently associated with increased mortality. Many risk factors have been associated with IAH, but the results have varied depending on the definitions used and the population studied.

The IROI study, conducted in 15 ICUs worldwide, consecutively enrolled mixed ICU patients ($n = 491$) with a bladder catheter. IAH was measured a minimum of every 8 hours. Subjects with a mean intra-abdominal pressure equal to or greater than 12 mm Hg were defined as having IAH. According to investigators, IAH was present in 34.0% of the patients on the day of ICU admission (159/467) and in 48.9% of the patients (240/491) during the observation period. The severity of intra-abdominal hypertension was as follows: grade I, 47.5%; grade II, 36.6%; grade III, 11.7%; and grade IV, 4.2%.

Other important findings of the study include:

- The severity of IAH during the first 2 weeks of the ICU stay was identified as an independent predictor of 28- and 90-day mortality, while the presence of IAH on the day of ICU admission did not predict mortality.
- Body mass index (BMI), APACHE II score greater than or equal to 18, presence of abdominal distension, absence of bowel sounds, and positive end-expiratory pressure (PEEP) greater than or equal to 7 cm H₂O were independently associated with the development of IAH at any time during the observation period.
- In subjects without IAH on day 1, BMI combined with daily positive fluid balance and PEEP greater than or equal to 7 cm H₂O (as documented on the day before IAH occurred) were associated with the development of IAH during the first week in the ICU.

The current study supports the differential impact of IAH grades on mortality. Previous studies have shown that IAH grade I (12–15mm Hg) may not increase mortality. It is possible that IAH to some degree (grade I, and possibly in some cases also grade II) just mirrors the severity of the underlying disease and its treatments while not by itself having an additional deleterious physiologic effect or leading to worse outcomes compared with higher grade IAH.

The severity of IAH needs to be considered when carrying out future research and in providing future treatment recommendations, the investigators point out.

They also would like to note that positive fluid balance, although shown to be a risk factor for IAH in several studies, could be most relevant later in the ICU stay, following aggressive resuscitation, when resistance to fluid mobilisation is present.

Source: [Critical Care Medicine](#)

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