human immunodeficiency virus, means that condoms should be used with high-risk partners. But the findings reported by Hubacher et al. should reassure clinicians and women alike that copper IUDs, which are by far the most common type of IUD used in the United States and around the world, are not a threat to the health or future fertility of the women who use them, including those without children.

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The Acute Respiratory Distress Syndrome, Mechanical Ventilation, and the Prone Position

The acute respiratory distress syndrome is a devastating, often fatal inflammatory condition that probably affects more than a million patients throughout the world each year. Since its description over 30 years ago, this syndrome has claimed the attention of clinicians and researchers because it is associated with an extremely high mortality rate and is difficult to treat, and because the pathophysiology of the disorder is unique.

The common denominator in the acute respiratory distress syndrome is hypoxemia. Virtually all affected patients require mechanical ventilation to improve arterial oxygenation and minimize the energy costs of breathing. Ironically, the focus on normalizing blood gases may have inadvertently contributed to the high mortality rate because of the large tidal volumes delivered during mechanical ventilation. Twenty years ago, tidal volumes of 15 to 20 ml per kilogram of body weight were commonly used in patients receiving mechanical ventilation for the acute respiratory distress syndrome in an attempt to achieve normal values for the partial pressure of carbon dioxide and oxygen saturation. However, experimental data have shown that ventilatory strategies that overdistend parts of the lung or allow the lung to cycle repeatedly between a collapsed state and an open state can lead to injury — so-called ventilator-induced lung injury.3,4 Patients with the acute respiratory distress syndrome are particularly susceptible to this form of injury, because the disorder causes the collapse or consolidation of large regions of the lung, often leaving only a small percentage of the lung available for ventilation.5 Hence, a tidal volume that might not overdistend the lung in a normal person could lead to regional overdistention and thus cause ventilator-induced lung injury in a patient with the acute respiratory distress syndrome.

The clinical effects of ventilator-induced lung injury may extend beyond the lungs. The majority of patients with the acute respiratory distress syndrome die not from hypoxemia but from multiple-organ failure.6 The mechanisms leading to multiple-organ failure are probably multifactorial, but there is evidence that lung injury caused by mechanical ventilation can result in the release of several mediators, including proinflammatory cytokines.7 These mediators, as well as endotoxin or bacteria, may enter the systemic circulation8,9 and cause organ dysfunction and, ultimately, multiple-organ failure.10 In other words, ventilator-induced lung injury, not hypoxemia, may be the primary cause of death in many patients with the acute respiratory distress syndrome. There are data that support this idea. Last year, a consortium sponsored by the National Institutes of Health (NIH) reported that reducing the tidal volume from 12 to 6 ml per kilogram decreased mortality by 22 percent among patients with the acute respiratory distress syndrome.11 The implication of this finding is that by inducing iatrogenic lung injury during mechanical ventilation, clinicians have inadvertently been contributing to the high mortality associated with the syndrome.

How can clinicians improve oxygenation in patients with the acute respiratory distress syndrome?
improve patient care? Taken at face value, the findings do not support the use of the prone position in all patients with the acute respiratory distress syndrome. However, a post hoc analysis by Gattinoni et al. showed that placing patients in the prone position reduced mortality at 10 days in the quartile of patients who were the most ill. Post hoc analyses are notoriously unreliable, but this finding is intriguing. In caring for a patient with the acute respiratory distress syndrome (as with all patients), the clinician has to weigh the potential benefits of any therapy against its risks, often in the absence of definitive evidence. This is particularly true in the intensive care unit, where many patients have complex disease processes. I believe that for the most severely ill patients, if there are no contraindications, it is now reasonable to use ventilation at a low tidal volume with the patient in the prone position, for several reasons: the biologic rationale for using the prone position is strong; major complications, as ascertained in this study, appear to be limited; the costs are minimal; and there is evidence, albeit weak at present, that mortality is decreased in the subgroup of patients who are most severely ill. I do not mean to imply that the prone position should be the standard of practice or that there is no need for a definitive study. Indeed, the results of this study underscore the need for an investigation addressing the hypothesis that the prone position is beneficial when used for longer periods and for the most severe cases of the acute respiratory distress syndrome.

These are exciting times for intensivists caring for patients who require mechanical ventilation. Basic research on the mechanisms of ventilator-induced lung injury has led to the development of ventilatory strategies that have been shown to decrease mortality in randomized clinical trials. Future studies that identify patients at risk for ventilator-induced lung injury, test new ventilatory strategies, and identify the underlying molecular mechanisms of the lung injury will dramatically alter our approach to mechanical ventilation.

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IN PATIENTS WITH HEART FAILURE

Internal jugular vein.3 In 1902, Mackenzie established
lation.
and will help refocus attention on proper technique
nd will help refocus attention on proper technique

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Proper examination of the jugular venous pulse
requires a bed or examining table that permits con-
trolled adjustment of the patient’s trunk above the
horizontal plane.7 The examination should begin with
a 30-degree angle of elevation, with subsequent ad-
justment of the trunk to the angle that achieves the
maximal visible oscillations of the right internal jug-
ular vein. The patient’s head should be turned slightly
to the right to avoid compression of the internal jug-
ular by the overlying sternocleidomastoid muscle.
The external and internal jugular veins are both ex-
amined — the external for the mean right atrial pres-
sure, and the internal for both wave form and pres-
sure. The nonpulsatile external jugular vein may not
be visible unless it is mechanically distended by dig-
tal compression at the base of the neck. The exam-
ing room should be darkened, and a light beam
(from a pocket flashlight) directed tangentially to high-
light the fluctuations of the right internal jugular
pulse. The examiner’s left hand should direct the light
source while the thumb of the right hand palpates
the left carotid pulse as a reference for timing, as Mac-
enzie recommended.4 Heart sounds can be used as
an alternative reference, which was Potain’s recom-
modation.3 What the eye perceives is a series of gentle,
undulating crests and troughs. Attention should be
focused on the nonpulsatile external jugular vein
and then on the heights of the internal jugular A and
V waves, in centimeters, above the sternal angle.7

Potain attributed the third heart sound to the sud-
den cessation of distention of the ventricle in early
diastole and offered advice on how best to elicit this

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