

Table 2. Typical Symptoms and Signs of Presyncope

Typical symptoms of presyncope	Faintness, dizziness, nausea, feeling warm/hot or cold, abdominal pain, visual disturbance (black spots, blurred vision)
Typical signs of presyncope	Pallor/paleness, sweating, vomiting, shivering, sighing, diminished postural tone, confusion

general population at some point in their lives.^{10,11} Syncope leads to the loss of postural tone and may result in physical injury, including fractures, intracranial hemorrhage, or other organ damage, if the individual is upright at the time of the syncopal episode. Injury is present in 30% of patients who present to an emergency department after syncope.¹² Syncope results in 2% to 6% of hospital admissions internationally and in the United States accounts for at least \$2.4 billion in annual hospital costs.^{11,13,14} Recurrent syncopal episodes, occurring in ~20% of individuals during the first 4 years after an initial episode, are associated with additional morbidity and healthcare costs.^{11,14}

Vasovagal syncope and orthostatic syncope result in 21.2% and 9.4% of syncopal episodes, respectively.¹⁵ The underlying physiology of both conditions is decreased blood return to the heart, leading to decreased cardiac output, decreased global cerebral perfusion, and subsequent loss of consciousness.¹⁶ Although other causes of syncope can represent more substantial underlying pathology, vasovagal syncope and orthostatic syncope are generally relatively benign; however, they can lead to injury and significant lifestyle impairment for those with recurrent episodes. The symptoms preceding loss of consciousness are known as presyncope and can last for a few seconds before the onset of vasovagal and orthostatic syncope. Associated signs and symptoms include pallor, sweating, lightheadedness, visual changes, and weakness (Table 2). Presyncope presents recognizable signs and symptoms and a period during which rapid first aid treatment could improve symptoms or prevent syncope from occurring.

Evidence Summary—New 2019

The 2019 ILCOR systematic review of the adult and pediatric literature resulted in the inclusion of 2 randomized controlled trials and 6 observational studies on first aid interventions for the treatment of presyncope.¹ These studies enrolled a total of 246 participants between 15 and 75 years of age with a confirmed history of vasovagal or orthostatic-related syncope. Researchers across the studies applied a variety of physical counterpressure maneuvers (PCMs), including handgrip, arm tensing, abdominal muscle tensing, leg crossing with tensing, squatting, and neck flexion (Table 3). Overall, use of PCMs resulted in increased blood pressure, improved symptoms, and the ability to prevent syncope

compared with no intervention. Despite the lack of uniform results across all studies, benefit for these outcomes was found with the use of upper-body, lower-body, neck, and abdominal PCMs. In an evaluation of available comparative data, lower-body PCMs demonstrated a greater ability to increase blood pressure and to avoid syncope compared with upper-body PCMs. No adverse events or injuries were reported as a result of PCM use.

Recommendations—New 2019

1. If a person experiences signs or symptoms of presyncope (including pallor, sweating, lightheadedness, visual changes, and weakness) of vasovagal or orthostatic origin, the priority for that person is to maintain or assume a safe position, such as sitting or lying down. Once the person is in a safe position, it can be beneficial for that person to use PCMs to avoid syncope (*Class 2a; Level of Evidence C-LD*).
2. If a first aid provider recognizes presyncope of suspected vasovagal or orthostatic origin in another individual, it may be reasonable for the first aid provider to encourage that person to perform PCMs until symptoms resolve or syncope occurs. If no improvement occurs within 1 to 2 minutes, or if symptoms worsen or reoccur, providers should initiate a call for additional help (*Class 2b; Level of Evidence C-EO*).
3. If there are no extenuating circumstances, lower-body PCMs are preferable to upper-body and abdominal PCMs (*Class 2b; Level of Evidence C-LD*).
4. The use of PCMs is not suggested when symptoms of a heart attack or stroke accompany presyncope (*Class 3: Harm; Level of Evidence C-EO*).

Discussion

Consistent with the chain of survival behaviors,¹⁷ educating individuals and at-risk populations about vasovagal and orthostatic presyncope, including signs and symptoms and associated risks with syncope, supports the first link of plan and prepare. Beyond first aid courses, medical providers can teach those at greater risk for syncope to perform PCMs. The second link, early recognition, allows those experiencing or observing the signs and symptoms of presyncope to initiate appropriate action to keep the person safe from a potential syncopal episode. The third links, early access to advanced care and first aid actions through the use of PCMs, are appropriate at the first aid level and can be