simple measures:
- patient should be sitting in an erect position
- high flow oxygen should be administered to hypoxic patients with acute pulmonary oedema
- a single dose of opiate may alleviate distress & also temporarily reduce cardiac preload
- urinary catheterisation is essential in the severely compromised patient to monitor urine output

diuretics:
- although not supported by randomised trials, it is clear that intravenous diuretic therapy can cause rapid relief of pulmonary oedema and symptoms of acute decompensated heart failure
- frusemide can be given as a bolus or an infusion
- a thiazide can be added with significant fluid overload

DVT prophylaxis:
- patients with severe heart failure are often poorly mobile, due to breathlessness, peripheral oedema & the presence of monitoring & treatment equipment
- the MEDENOX (prophylaxis in medical patients with enoxaparin) trial of 1102 patients including 376 NYHA III/IV heart failure, found that 14.9% of placebo treated patients suffered venous thromboembolism compared with 5.5% in the enoxaparin treated group. (this trial also included patients with other medical illnesses)

Nesiritide:
- recombinant human BNP is a natriuretic peptide that causes diuresis, reduces preload & afterload & may reduce left ventricular remodelling and fibrosis
- its use is being investigated

non-invasive ventilation:
- has favourable effects on intrathoracic and left ventricular transmural pressure in patients with congestive heart failure
- two metaanalyses of 23 and 15 trials encompassing over 2200 patients have shown that CPAP is associated with a significant reduction in mortality & intubation rates (OR 0.6 and 0.4 respectively)
- use of BIPAP was found to be associated with a significant reduction in intubation (OR 0.5) and a tendency towards a reduction in mortality
- head to head comparison of CPAP vs BIPAP shows no superiority of either technique in terms of intubation rates or mortality although BIPAP has the potential theoretical advantage of decreasing work of breathing
- one early trial showed an increase in MI rate with BIPAP compared with CPAP by this was probably because of type 2 error, randomisation error or equipment malfunction (BIPAP was unable to sense and cycle in tachypnoeic patients). This finding has not been confirmed in subsequent studies.

invasive ventilation:
- refractory pulmonary oedema is generally associated with a poor prognosis; however, in some patients positive pressure ventilation leads to a dramatic rapid improvement