Introduction. Since their introduction to clinical use, no formal evaluation of multipurpose, pacing, Swan-Ganz catheters has been reported in the literature. Since January 1981, the multipurpose catheter was used in critically ill patients who were admitted to our multidisciplinary intensive care unit. This study reports indications, advantages, pitfalls and certain technical maneuvers that improved our success rate.

Methods. Multipurpose catheters were used in forty critically ill patients, mean age 65 ± 5 (SD) who needed both invasive hemodynamic monitoring as well as temporary pacing for rhythm disturbances. 93-200-7F-Edwards multipurpose Swan-Ganz with both atrial and ventricular pacing leads were used in all patients. The pacing source was Medtronic-5375 demand pulse generator. Catheters were inserted by percutaneous puncture of either the left subclavian vein or right internal jugular vein and were floated to the pulmonary artery by monitoring the pressure waves. The position of the catheter was confirmed post-insertion by chest x-rays and EKG strips. In each patient success or failure of atrial as well as ventricular capturing and sensing were noted and recorded daily. Complications and attempts for readjustments were also recorded.

Results. Multipurpose catheter was used in 40 patients. Insertion of the catheter was successful in all patients. We were able to successfully achieve pacing via either atrial or ventricular electrodes in 36 (90%) patients. The pacing was maintained for an average of 5 days (range 4-6 days). Atrial capturing was successful in 15 (40%) patients while ventricular capturing occurred in 36 (90%) patients. Demand atrial pacing below the patients' heart rate was unsuccessful in 20 (50%) patients. Demand ventricular pacing was successful in 28 (70%) patients. All catheters needed occasional readjustment for optimizing capture. Ventricular pacing was abandoned in 8 patients due to wandering pacemaker. Only complication noted was that hiccups occurred simultaneously with paced beats in 5 (12.5%) patients.

Discussion. Based on our experience, we conclude that multipurpose Swan-Ganz catheters are a useful and effective therapeutic modality in critically ill patients. Advantages of this catheter over conventional temporary pacers are:

1. Insertion of the catheter can be achieved without the aid of fluoroscopy and can be used during emergencies and even during cardiac resuscitation.
2. Hemodynamic monitoring can be obtained from the same catheter.
3. The catheter increases the safety of insertion of Swan-Ganz catheters in patients with bradyarrhythmias and sensitive myocardium.
4. We recommend the following patients as candidates for multipurpose catheter insertion:
   1. All patients with inferior wall myocardial infarction with unstable cardiovascular status.
   2. Patients with acute myocardial infarction with bradyarrhythmias.
   3. Patients undergoing barbiturate coma.
   4. Post-trauma patients with cardiac contusion.
   5. Patients on cardiopulmonary resuscitation.

5. To improve the success rate we recommend the following technical maneuvers:
   1. Leave the introducer in place with sterile sleeve over the catheter for future readjustments.
   2. Manipulate the catheter for optimum pacing only when the balloon is inflated and catheter is in wedge position.
   3. Avoid routine wedge measurements once the catheter is optimally pacing.
   4. For optimal atrial pacing attach the central electrode to the negative source and the distal electrode to the positive source.
   5. For optimal ventricular pacing attach the proximal electrode to the negative source and the distal to the positive source.
   6. Do not use the atrial pacing on the demand mode.
   7. Treat hiccups by either decreasing the mA of the pacing generator or repositioning.