

# Hospital-Based Systems to Improve Quality of Care for Heart-Failure Patients

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*Because much can be done now to block the devastating natural course of heart failure, it is important to understand the role of various treatment paradigms and to institute them in as many patients as possible, with the use of well-constructed practice guidelines to provide common themes for treating specific patients. However, guidelines cannot address all relevant clinical situations, consensus often cannot be reached because evidence is not always available regarding certain therapeutic strategies, and guideline development can be a slow, politically charged, and difficult process. In addition, one must assess compliance with guidelines and the impact of recommendations on outcomes. Continuous quality improvement initiatives in large group practices and hospitals achieve this goal most effectively. Assessment of the impact and accountability with regard to compliance can then be re-related to clinical experience and observation, triggering additional therapeutic developments and strategies that will focus on continued practice improvement. Continuous quality improvement initiatives in the hospital setting have many advantages and are generally seen as good business practice; because of the regulations hospitals are subject to, particularly the linking of payments to hospital accreditation, systems are in place to improve practice patterns. [Rev Cardiovasc Med. 2002;3(suppl 3):S36–S41]*

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**Key words:** Heart failure • Continuous quality improvement • Angiotensin-converting enzyme inhibitors • Beta-blockers • Evidence-based data

Great insight into the pathophysiology of heart failure has guided introduction of new therapeutic approaches. Nonetheless, treatment of heart failure is a challenging task and depends on making the proper diagnosis, staging appropriately the syndrome's severity, and choosing medical and surgical interventions that are likely to attenuate suffering while increasing the life span of afflicted individuals. It is important that treatment of heart failure is no longer the simple dispensation of digitalis and a diuretic. Medications for heart failure have evolved from diuretics to digoxin, to vasodilators, to angiotensin-converting enzyme (ACE) inhibitors, to angiotensin-II receptor blockers, to  $\beta$ -adrenergic receptor blockers and a variety of combinations of these drugs.

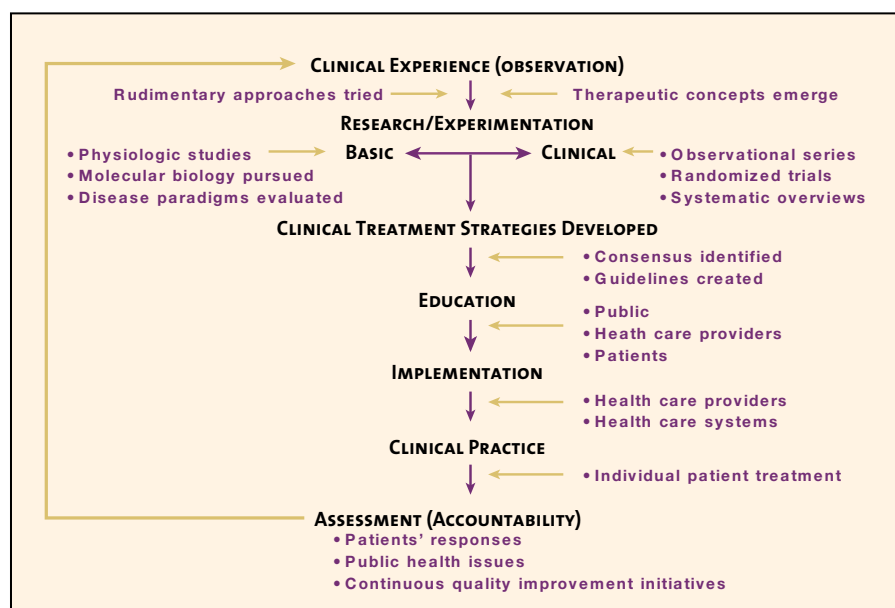


Figure 1. Evidence-based medical practice.

Also important is the fact that clarification of therapeutic strategies that have proved detrimental in heart failure patients, such as prescription of certain inotropic and

receptor-blocking drugs. In particular, carvedilol and long-acting metoprolol have become mainstay  $\beta$ -blockers in the stable outpatient with heart failure but no substantive congestion.

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antiarrhythmic agents, allows elimination of these drugs from treatment protocols. Because much can be done now to block the devastating natural course of heart failure, it is important to understand the role of various treatment paradigms and to institute them in as many patients as possible. Indeed, we are now also seeing an emphasis on treating patients with heart failure earlier so that "preventive" strategies are begun in an attempt to prevent deterioration of ventricular function and manifest congestive heart failure. There is no doubt that heart failure treatment protocols must include, if at all possible, ACE inhibitors and  $\beta$ -adrenergic

Unfortunately, it is difficult in the heart failure clinical milieu appropriately to prescribe and titrate to target dose those medications known to be effective.

### Translating Evidence into Clinical Practice

Figure 1 provides an overview in graphical format of how progress generally occurs in medical practice. Clinical experience and observation regarding treatment paradigms generally prompt basic and clinical research and experimentation. Rudimentary treatments are tried, with therapeutic concepts emerging. Observational studies, randomized

Table 1  
Translating Data into Clinical Practice: Impediments

- Ignorance (education)
- Skepticism (doubt)
- Disbelief (trial flaws)
- Inconvenience (laziness)
- Disincentives (effort)

clinical trials, and systematic overviews of published data help experts to identify consensus and create recommendations or guidelines for clinical treatment strategies. Education regarding these strategies must be focused on the public, specific patients, and health care providers so that implementation of ideal strategies will occur. This, however, is an extraordinary challenge.

Table 1 summarizes some of the impediments to translating evidence-based data into clinical practice. Certainly, not knowing of the intervention's importance (ignorance) will hamper introduction of new practices into the clinic. However, clinicians are a skeptical lot, and doubt or disbelief can also limit translation of data into clinical practice. It is, therefore, extremely important that appropriate clinical trials be performed so that skepticism is mitigated. Finally, the inconvenience of implementing protocols

Table 2  
Translating Data into Clinical Practice: Solutions

- Education
- Practice guidelines
- Incentives
- Mandates

and disincentives related to the workload mandated in some practices can be impediments to translating data into action. It is, for example, challenging and sometimes difficult to uptitrate heart failure patients onto  $\beta$ -blockers.

Table 2 summarizes some approaches to these impediments: including more education, developing specific practice guidelines that are endorsed by professional societies, and perhaps providing incentives, mandates, or even punitive action when certain practice recommendations are ignored.

**Development of Guidelines for Heart Failure Patient Evaluation and Management**

In general, well-constructed practice guidelines will provide common themes for treating specific patients. For example, the most common themes of currently available heart failure practice guidelines are summarized in Table 3.<sup>2-11</sup> These include the identification and aggressive treatment of ischemia in patients with heart failure (revascularization

Table 3 Most Common Themes of Heart Failure Guidelines
• Identify and aggressively treat ischemia in patients with heart failure (revascularization)
• Use angiotensin-converting enzyme inhibitors in all tolerant patients with left ventricular systolic dysfunction
• Use $\beta$ -blockers in stable patients with mild to moderate symptoms and no significant congestion
• Avoid agents with incomplete benefit/risk profiles
• Diagnose and address underlying and precipitating disorders
• Prescribing nonpharmacologic therapies: exercise; salt and fluid restriction
• Educate patient, family, and caregivers

family, and caregiver education.

There are several problems with clinical practice guidelines, however. Generally, the guidelines do not emphasize the importance of risk stratification with regard to syndrome severity, and there are few recommendations for asymptomatic or minimally symptomatic patients with heart failure or the more advanced decompensated patients. Furthermore, guidelines cannot

Finally, practice guidelines generally do not focus on how one should implement practice change. Examples of this relate, again, to recommendations regarding prescription of ACE inhibitors and  $\beta$ -blockers in the heart failure population. How best should this be accomplished? Should these agents be started in all patients hospitalized for heart failure, or should they be reserved for the outpatient population?

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strategies), the use of ACE inhibitors in all tolerant patients with left ventricular systolic dysfunction, and prescription of  $\beta$ -blockers in stable patients with mild to moderate symptoms and no significant congestion. Furthermore, most guidelines caution against prescribing agents with incomplete benefit/risk profiles. Guidelines generally stress the importance of diagnosing and addressing underlying precipitating disorders, prescribing nonpharmacologic therapies such as exercise and salt and fluid restriction, and providing patient,

address all relevant clinical situations, and often consensus cannot be reached because evidence is not always available regarding certain therapeutic strategies.

In addition, guideline development can be a slow, politically charged, and difficult process. Guidelines frequently do not respond quickly to new knowledge or development of therapies. It is also difficult to educate clinicians regarding guidelines, and many clinicians characterize them as being excessively regulatory and intrusive.

**Continuous Quality Improvement Efforts**

Returning to Figure 1, we see that once clinical practice is affected, one must assess compliance with guidelines and the impact of recommendations on outcomes. Unfortunately, there is no easy way to do this. It turns out that continuous quality improvement (CQI) initiatives in large group practices or hospitals achieve this goal most effectively. Assessment of the impact and accountability with regard to compliance can then be re-related to clinical experience and observation, triggering additional therapeutical developments and strategies that will focus on continued practice improvement.

**Table 4**  
**Continuous Quality Improvement: Heart Failure Process**

Area of challenge identified	High heart failure morbidity/mortality
Consensus identified	Treatment “guidelines” developed (angiotensin-converting enzyme inhibitors and $\beta$ -blockers in heart failure)
Caregivers educated	Continuing medical education programs
Education impact assessed	“Penetration” of angiotensin-converting enzyme inhibitor prescription
Quality of care defined	Use of guidelines strategies assessed
Situation-specific strategies outlined and implemented	Continuous quality improvement initiated; preimplementation/postimplementation evaluation and documentation

Table 4 summarizes the CQI process in place at most accredited hospitals. Identifying an area of challenge is obviously important, and heart failure, with its high morbidity and mortality, is an exemplary difficulty. Nevertheless, consensus guidelines regarding best treatment practices for heart failure are available, and caregivers have been educated extensively through continuing education programs over the past decade. Data are available regarding penetration of recommendations such as the use of ACE inhibitors. Therefore some aspects of quality of care can be defined. CQI initiatives can be created so that more patients are started on these specific medications.

CQI initiatives in the hospital setting have many advantages. Recommendations are usually based on “best treatment practices” and reinforce consensus used to develop treatment guidelines. These initiatives also tend to focus on simple strategies with measurable outcomes (the proportion of eligible patients discharged with a diagnosis of heart failure who have been prescribed an ACE inhibitor, for example). Also, no one would question the overall public

health benefit that would accrue to patients with congestive heart failure. CQI initiatives can also establish benchmarks that will allow comparison of different institutions and earmark institutional excellence.

Furthermore, having CQI initiatives in place will bring hospitals into compliance with Health Care Financing Administration, Joint Commission on Accreditation of Hospitals, and state peer-review organization guidelines and regulations regarding quality of practice.

Because of this, CQI initiatives—certainly those approved by the Joint Commission on Accreditation of Hospitals—are generally in place at most health care institutions.

With respect to utilizing CQI initiatives to optimize heart failure therapeutic practices, it makes sense to focus on inpatients, and Table 5 highlights this point. When a decompensated congestive heart failure patient requires more aggressive and sophisticated care, he or she must generally be hospitalized. Because of the regulations hospitals are subject to and particularly the linking of payments to hospital accreditation, systems are in place to improve practice patterns such as the prescription of desirable drugs (again, ACE inhibitors and  $\beta$ -blockers in congestive heart failure). These CQI practices are generally looked upon as desirable by hospitals, irrespective of the fact that they are mandated by regulatory agencies. In fact, most institutions believe that good business practices equate with CQI.

In the outpatient setting, however, practitioners are largely unregulated with respect to quality of care. Most outpatient care is never subjected to peer review, and it is rare to see CQI

**Table 5**  
**Continuous Quality Improvement:**  
**Comparison of Heart Failure Approaches**

<u>Inpatient</u>	<u>Outpatient</u>
<ul style="list-style-type: none"> <li>• Requires hospital</li> <li>• Hospitals regulated</li> <li>• Regulations and payment</li> <li>• CQI desirable</li> <li>• CQI mandated</li> <li>• CQI in place</li> <li>• “Business” = CQI</li> </ul>	<ul style="list-style-type: none"> <li>• Unregulated</li> <li>• Not reviewed</li> <li>• CQI not in place</li> <li>• Highly variable</li> <li>• Surrogates present</li> <li>• No cooperation</li> <li>• “Business” &gt; CQI</li> </ul>
CQI, continuous quality improvement	

measures in place in outpatient practices. The few exceptions are generally large group practices. Furthermore, practice patterns in the outpatient setting are more variable than those studied in inpatients. In the outpatient setting there may also be more physician surrogates delivering health care and, therefore, a greater challenge with respect to education. Finally, individual practitioners are often unwilling to cooperate with CQI initiatives because of a variety of difficulties and fears,

example, an educational “grand rounds” can be scheduled to overview the American College of Cardiology/American Heart Association Heart Failure Diagnosis and Treatment Guidelines. Clinicians can then be urged to discharge appropriate patients on ACE inhibitors. Subsequent review can then quantitate and document compliance with these directives. To help the clinicians comply with recommendations, routine admission and discharge orders can be created

*Practice patterns in the outpatient setting are more variable than those studied in inpatients.*

including the challenge of practicing in a litigious society. Also important is the fact that the “business” of outpatient practice is given vastly greater weight than CQI is in such a setting. Table 6 summarizes hospital-based CQI measures that can be effective in changing practices regarding care of the heart failure patient. Hospitals generally have education programs for introducing and then monitoring practice guideline compliance. For

that are preprinted and placed on the charts of all patients admitted with the diagnosis of heart failure, and critical care pathways can be developed in which nurse clinicians or nurse practitioners do case reviews to suggest therapeutic interventions to the clinician. Other hospitals have successfully used discharge facilitators to ensure that all appropriate tasks have been performed at the time of discharge

Table 6 Continuous Quality Improvement: Heart Failure Approaches in the Hospital Setting
• Education for guidelines compliance
• Routine admit/discharge orders
• Critical-care pathways
• Nurse clinician/nurse practitioner case review
• Discharge facilitators
• Concurrent peer review
• Post hoc review/practitioner reports

for patients with certain diagnoses. Of course, concurrent peer review and post hoc review of practitioner practice with so-called “report cards” can be effective. Obviously, implementation of CQI programs must be done with common sense and compassion for the harried clinician. If this is not done, resistance to implementation of guidelines will be great.

### Main Points

- Treatment of heart failure depends on making the proper diagnosis, staging the syndrome’s severity, and choosing medical and surgical interventions that can attenuate suffering while increasing life span.
- Heart failure treatment protocols must include, if at all possible, angiotensin-converting enzyme (ACE) inhibitors and β-adrenergic receptor–blocking drugs.
- Carvedilol and long-acting metoprolol have become mainstay β-blockers in the stable outpatient with heart failure but no substantive congestion.
- Heart failure practice guidelines recommend the identification and aggressive treatment of ischemia in patients with heart failure (revascularization strategies).
- The use of ACE inhibitors is recommended in all tolerant patients with left ventricular systolic dysfunction.
- Prescription of β-blockers is recommended for stable patients with mild to moderate symptoms and no significant congestion.
- Most guidelines caution against prescribing agents with incomplete benefit/risk profiles.
- ACE inhibitor utilization in congestive heart failure patients who tolerate these drugs and have left ventricular systolic dysfunction can be enhanced by implementation of hospital-based continuous quality improvement programs.

### Continuous Quality Improvement and the Problem of Beta-Blockers in Heart Failure

Data<sup>1</sup> suggest that ACE inhibitor utilization in congestive heart failure patients who tolerate these drugs and have left ventricular systolic dysfunction can be enhanced by implementation of hospital-based CQI programs. It also seems logical to take any opportunity to improve penetration of appropriate  $\beta$ -blocker utilization for congestive heart failure as well. One should extrapolate from the ACE inhibitor experience to utilization of  $\beta$ -blockers in these patients. It is appropriate, then, to consider  $\beta$ -blocker prescription in the hospital prior to discharge for stabilized patients who have been satisfactorily diuresed during their hospital visit. If  $\beta$ -blocker utilization in appropriate hospitalized congestive heart failure patients becomes a measure of quality, one would expect that a greater proportion of

eligible patients would end up on this therapy.

By adding  $\beta$ -blockers to ACE inhibitors in CQI programs, one can increase caregiver education, institute implementation processes, and monitor and enforce guideline compliance. It is important to remember that there are many other analogies to ACE inhibitors. The practice of starting these agents in the hospital was not studied in clinical trials; however, common sense emphasized the logic of this practice. The same can be said for appropriate  $\beta$ -blocker prescription in these congestive heart failure patients. Surely we can do more to increase  $\beta$ -blocker use in heart failure. Hospital-based systems represent an important means of improving the quality of care for heart failure patients. ■

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