

# Usefulness of echocardiography in the assessment of internal medicine inpatients

## An analysis according to ACC/AHA guidelines

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**Background.** We aimed to analyze the importance of echocardiography in our Internal Medicine Institute. We think that this technique could have a large impact in the evaluation of the internistic inpatient who is usually affected by multiple pathological problems.

**Methods.** Analysis was performed according to the ACC/AHA guidelines for the application of echocardiography. The data of 1211 consecutive inpatients were analyzed.

**Results.** Sixty-three per cent of all the patients had two or more associated diseases. Moreover, patients in whom echocardiography could be considered appropriate or useful were 67%. Our results point out that echocardiographic examination is generally a technique of great importance for the evaluation of internistic inpatients.

**Conclusions.** This study could represent a useful background for a cost/benefit analysis that should evaluate the utility of a specifically-dedicated echocardiographic laboratory for optimal, autonomous management of internal medicine inpatients.

**KEY WORDS:** Echocardiography - Internal medicine - Inpatients.

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Moreover, to our knowledge there is no available data on the impact of echocardiography in an Internal Medicine ward.

We think that such an analysis could be of great utility in comprehending the actual needs of this examination in a ward where patients are usually affected by multiple pathological problems.

For all these reasons, we wanted to analyse the impact of echocardiography in our Internal Medicine Institute according to the ACC/AHA guidelines for the clinical application of echocardiography.<sup>1,2</sup>

Our analysis is a retrospective one, so that it only aimed at verifying *a posteriori* the relevance of the technique on inpatient management.

### Materials and methods

We analyzed the record-cards of 18-consecutive-month admissions in our University Internal Medicine Institute. A computerized database was used in order to record the data of 1211 patients.

For each patient the following data were recorded: age, gender, and diagnosis. In particular, diagnosis was divided and stored as single diseases in which each patient had resulted affected at discharge.

Despite finite resources and personnel there is a strong national commitment to improvement in health care. It can be, therefore, appropriate to examine the impact of developing technology on the practice of medical care to better utilize resources and consequently better organize wards. Such an analysis could potentially have an impact on the effectiveness and cost of medical care.

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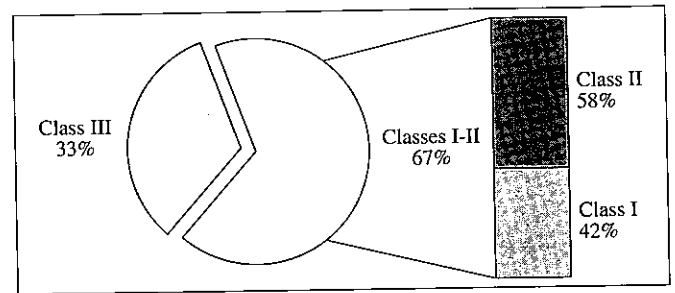
TABLE I.—Frequencies of each disease (listed in alphabetic order).

Patology	No.	%	Gender (w/m)	Age (years)
Acute myocardial infarction	8	0.7	5/3	71±9
Acute pulmonary edema	8	0.7	3/5	72±11
Acute rheumatic fever	6	0.5	4/2	26±14
Allergopathy	29	2.4	16/13	39±16
Anemia	56	4.6	40/16	52±23
Arterial hypertension	291	24	151/140	58±14
Arteriopathies	21	1.7	6/15	66±8
Asthma	9	0.7	5/4	37±15
Atherosclerosis	101	8.3	51/50	72±9
Bronchitis	31	2.6	15/16	68±17
Cerebrovascular diseases	75	6.2	33/42	70±12
Chronic epatopathy	146	12.1	52/94	60±16
Chronic obstructive pulmonary disease	105	8.7	25/80	68±12
Complications of diabetes	94	7.8	44/50	65±12
Coronary artery disease	123	10.2	54/69	68±11
Diabetes type I	8	0.7	5/3	48±17
Diabetes type II	184	15.2	91/93	65±11
Disease of the immune system	13	1.1	8/5	51±14
Disseminate intravascular coagulation	2	0.2	1/1	69±3
Dyspepsia	84	6.9	52/32	51±18
Fever of unknown origin	14	1.2	8/6	42±23
Flebopathy	41	3.4	23/18	62±17
Gallstone disease	63	5.2	33/30	61±16
Heart failure	89	7.3	41/48	68±13
Hyperlipoproteinemias	62	5.1	21/41	53±12
Hyperparathyroidism	3	0.2	2/1	59±14
Hyperuricemia	19	1.6	7/12	57±4
Impaired glucose tolerance	40	3.3	20/20	60±17
Infectious diseases	90	7.4	41/49	48±21
Inflammatory bowel disease	12	1.0	8/4	47±22
Interstitial lung disease	1	0.2	1/0	30±0
Obesity	140	11.6	90/50	55±14
Osteoarthritis	138	11.4	76/62	60±14
Pancreatitis	7	0.6	2/5	62±22
Peptic ulcer	51	4.2	17/34	54±18
Pericarditis	12	1	8/4	62±14
Pleuritis	23	1.9	9/14	58±20
Prostatitis	44	3.6	0/44	64±12
Psychiatric disorders	82	6.8	50/32	51±16
Pulmonary embolism	2	0.2	2/0	39±28
Rheumatic disease	35	2.9	26/9	53±13
Renal calculi	15	1.2	8/7	58±10
Renal failure	74	6.1	28/46	66±18
Skin diseases	17	1.4	11/6	54±18
Thyroid dysfunction	46	3.8	39/7	55±16
Tumors	138	11.4	65/73	64±15

The appropriateness of echocardiographic examination was evaluated by the above-mentioned guidelines, using the following classification system:

*Class I.*—Conditions for which or patients for whom there is general agreement that echocardiography is appropriate.

*Class II.*—Conditions for which or patients for



Class	No. (%)	Gender (W/M)		Age	Median
		No.	%		
I	343 (29)	164/179	47.8/52.2	65.7±13.9	67
II	463 (38)	232/231	50.1/49.9	51.4±17.1	51
III	405 (33)	200/205	49.4/50.6	48.8±20	47

Fig. 1.—Descriptive data regarding inpatients within echocardiographic classes.

whom echocardiography is frequently used but there is a divergence of opinion with respect to its appropriateness.

*Class III.*—Conditions for which or patients for whom there is general agreement that echocardiography is not appropriate.

We calculated average age, women/men ratio, frequency of each disease, and frequency of patients within each echocardiographic class.

## Results

The mean age of the whole study group was 54.6 ±18.7 years. Among the inpatients, 596 were women (average age±SD: 53±19 years) and 615 were men (average age±SD: 56±18 years). When we analyzed the data based on the presence of associated disorders, patients with two or more diseases were 63%.

Frequencies of each disease are shown in Table I and frequencies of patients within echocardiographic classes are shown in Figure 1.

## Discussion and conclusions

Our results suggest that echocardiographic examination is generally a technique of great importance for the evaluation of internistic inpatients. However, our data could underestimate its utility. Indeed, the analysis

we performed is *a posteriori* so that the complexity and peculiarity of internal-medicine inpatients may be not properly represented.

Nevertheless, our study identifies, partially at least, the actual application of this technique for internal medicine wards. A cost/benefit analysis should evaluate both the amount of information coming out of such an examination and the utility of a specifically-dedicated echocardiographic laboratory for the optimal, autonomous management of internal medicine inpatients. Obviously, all this does not exclude a profitable interaction with cardiologists.

Such a laboratory could optimize:

- 1) the performance of this technique for this kind of patients with multiple pathological problems;
- 2) the time of hospital stay reducing the waiting time for this examination, and

3) the effectiveness of medical care with the support of echocardiographic data. All that could avoid an overload on the echocardiographic laboratory that could be instead specifically dedicated to assessment within cardiological wards.

### References

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