TABLE 1 Demographics, Indications for Defibrillator Implantation, and Appropriate Shocks

	DT (n = 55)	No DT (n = 55)	p Value
Implant location			<0.001
Subfascial	13	43	
Submuscular	24	5	
Subcutaneous	18	7	
Primary prevention	34 (62)	48 (87)	0.0001
Ischemic cardiomyopathy	22	21	NS
Nonischemic cardiomyopathy	23	30	NS
Congenital heart disease	3	3	NS
Channelopathy	7	1	NS
ESRD	14	3	0.007
DT successful	54	NA	–
DT time to therapy, s	15.1 ± 2.4	NA	–
Shock impedance during DT, Ω	69.0 ± 20.4	NA	–
Shock for spontaneous VT/VF	1 (2)	6 (11)	NS
Time to therapy, s	16	22.6 ± 12.4	
Shock impedance, Ω	59	63.6 ± 11.6	
Follow-up, days	341 (40-646)	199 (78-374)	NS

Values are n, n (%), mean ± SD, or median (interquartile range). Shock impedance and time to therapy refer to intraoperative shock impedance and time to therapy (at 65 J) in the DT group and shock impedance and time to therapy during spontaneous ventricular arrhythmias (at 80 J) in the no-DT group. Differences between means were calculated using unpaired Student *t* tests, and differences between medians were calculated using Mann-Whitney *U* tests.

DT = defibrillation testing; ESRD = end-stage renal disease; VF = ventricular fibrillation; VT = ventricular tachycardia.

in baseline demographics. The patients in the no-DT group were older and had lower ejection fractions, while those in the DT group were followed for a longer period of time. Most patients who did not undergo DT were in the second one-half of the study period, and operator experience could have played a role in improved system positioning. Also, the majority of patients who did not undergo DT underwent either submuscular (subserratus) or subfascial implantation of the pulse generator, which minimizes fat underlying the pulse generator and likely favors lower defibrillation energy requirements. Thus, these results may not be similar for purely subcutaneous implants. Although we report the largest group of patients who did not undergo DT, the overall number of patients was smaller compared with larger registries and prospective trials.

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Impact of Changes in Consensus Diagnostic Recommendations on the Echocardiographic Prevalence of Diastolic Dysfunction

The diagnosis of diastolic dysfunction (DD) is based on consensus recommendations (1,2), although classification is difficult because of a multiplicity of echocardiographic indexes and substantial overlap between values in healthy subjects and in patients. Recently, a joint task force of the American Society of Echocardiography (ASE) and the European Association of Cardiovascular Imaging (EACVI) proposed a new and simpler system for grading diastolic function (3). The changes are considerable, although their impact on the prevalence and severity of DD in healthy subjects and patients has yet to be studied.

We therefore calculated the prevalence of DD in a population-based study, comparing the 2016 ASE/EACVI recommendations (3) with several previous diagnostic algorithms (1,2,4,5).

Participants from the community-based prospective STANISLAS cohort (NCT01391442) underwent

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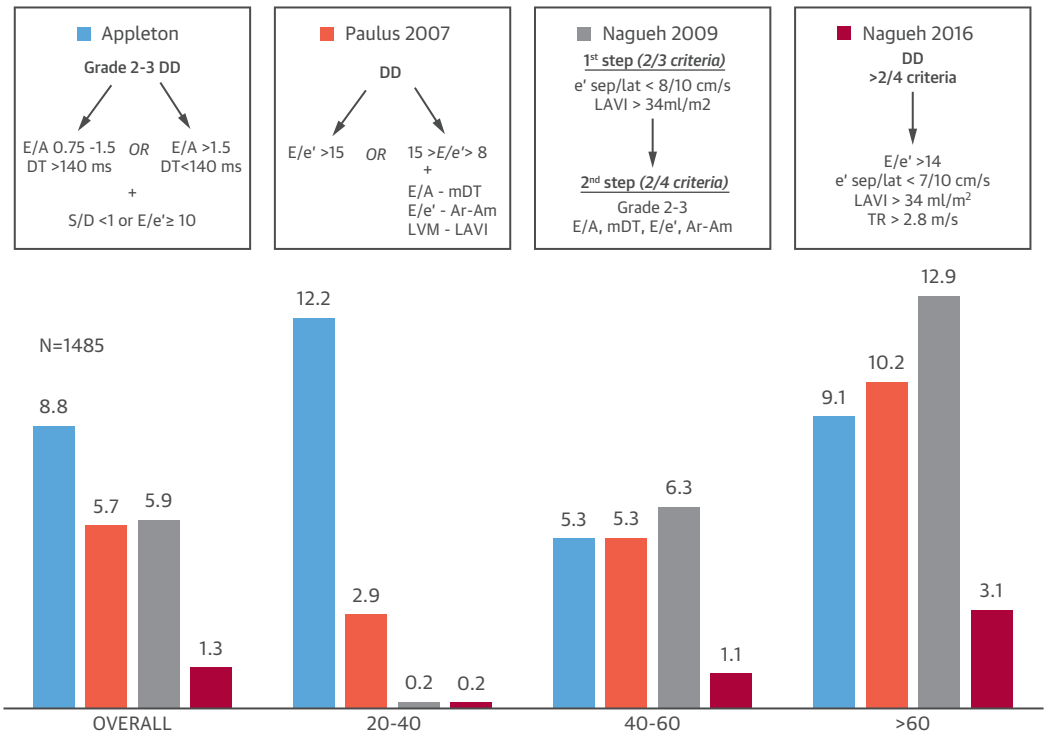
FIGURE 1 Prevalence of Diastolic Dysfunction in a Community-Based Cohort According to Published Diagnostic Algorithms



Participants (American College of Cardiology/American Heart Association stage A/B) were stratified by age and classified according to 4 diagnostic algorithms (the Appleton definition, the 2007 consensus statement, and the 2009 and 2016 ASE/EACVI recommendations). DD = diastolic dysfunction; DT = deceleration time; lat = lateral; LAVI = indexed left atrial volume; mDT = mitral E wave deceleration time; LVM = left ventricular mass; sep = septal; TR = tricuspid regurgitation.

transthoracic echocardiography with comprehensive evaluation of diastolic function (Vivid 9, GE Healthcare, Little Chalfont, United Kingdom). Patients with no histories of heart failure and with left ventricular ejection fractions >50% were classified according to: 1) the 2016 ASE/EACVI scoring system (3); 2) the 2009 ASE/EACVI recommendations (considering diastolic function grades 2 and 3); 3) the echocardiographic algorithm of the 2007 consensus statement (2); and 4) the Appleton definition (4) (**Figure 1**). The local ethics committee approved the research protocol, and all participants gave written informed consent.

There were 1,485 study participants (mean age 47 ± 14 years), and only 20 subjects (1.3%) had DD according to the 2016 criteria, with the proportion increasing with age. In this same population, the prevalence of DD according to previous recommendations was much higher, ranging from 5.7% to 8.8% (**Figure 1**). Applying the new recommendations in subjects >60 years of age reduced DD prevalence by 76%.

Expert consensus now recommends comprehensive assessment of several variables to evaluate DD as accurately as possible; however, applying the new criteria resulted in a marked change in prevalence. To our knowledge, this is the first head-to-head comparison including the new recommendations. In our population, the presence of a large number of subjects with abnormal mitral annular e′ velocities (54% of subjects >60 years of age) but only a small proportion of subjects with elevated filling pressures or left atrial enlargement (E/e′ ratio or indexed left atrial volume) explained the drop in DD prevalence. In the absence of striking evidence to support the changes, the new recommendations are puzzling. Such large variations in prevalence according to which definition of DD is used should be a source of great concern and may explain why we currently lack clear echocardiographic guidelines for clinical practice.

A predominant issue of the past 20 years in the assessment of diastolic function has been the lack of a

validated benchmark. Proposed options include circulating biomarkers, direct measurement of filling pressure, and phenomapping, but so far, outcome-based studies are lacking. Other subspecialty communities in the field of atrial fibrillation or hypertrophic cardiomyopathy have invested a lot of effort and provided key evidence by targeting the validation of scores against hard outcomes. This approach made it easier to reach a consensus within the cardiology community and promoted the use of subsequent guidelines. Similar hard outcomes do exist for DD, including the occurrence of heart failure with preserved ejection fraction (HFpEF), defined as the need for an unplanned hospitalization for heart failure with normal ejection fraction in a population of patients without heart failure at baseline.

Criteria for diagnosing DD should take account of the subject's age, as indicated by the wide differences in DD prevalence according to age and definitions in our study, and, ideally, functional responses to stress. Reference values for diastolic variables should be based on large normative databases, allowing the continuous influences of risk factors to be considered; this would probably be more appropriate than using dichotomous diagnostic classes. A big-data approach could be used to develop DD diagnostic software that incorporates clinical decision trees developed by machine learning, which can test multiple diagnostic approaches and select the combination of variables that best predicts clinical events. Such a diagnostic tool could revolutionize the clinical utility of echocardiography in this field, by allowing therapeutic interventions to be tested in patients identified as at high risk to develop HFpEF.

In the setting of a worsening HFpEF epidemic, further research using such new strategies will be essential to characterize this entity better and to identify patients at risk for progression to overt HFpEF. The echocardiographic community should now accept this challenge and then provide diagnostic recommendations once they are supported by outcome-based studies.

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History Repeating?

The Logics of History

We read with interest the paper by Seitz et al. (1) focusing on mapping areas of spatiotemporal electrogram dispersion in patients with atrial fibrillation (AF). According to the authors, these areas represent "AF drivers" and their ablation is a personalized, more effective strategy than antral PVI (pulmonary vein isolation) or a stepwise ablation approach. This is a déjà vu: the use of a vague ablation target compared with a nonrigorous control group to draw