assessment of suspected postoperative patient–prosthesis mismatch. We recently reported our experience with the modality of cine-computed tomography (CT) imaging, essentially moving pictures of the valve in motion.[2] This technique allows unprecedented precision in imaging the valve and its leaflet motion. The cine-CT gives the sensation of almost "being there," inside the heart, watching the valve work in real time (Figure 2 and Video 1). Cine-CT easily detects thrombus, pannus, and restricted leaflet motion with great accuracy and resolution. In our recent report, we found that many cases of late-onset suspected patient–prosthesis mismatch could be traced to an increase in a patient's weight over years postimplant, placing an increased circulatory burden on a properly functioning valve.

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See Article page 545.

Commentary: Valve Labeling Task Force: Efforts now needed by manufacturers and surgeons

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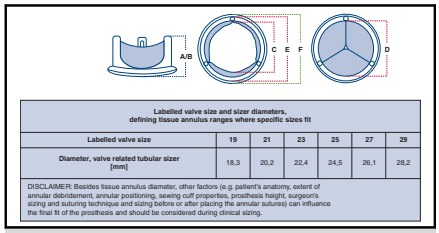

Recommended "Valve Chart." Distillate of the work of the Valve Labeling Task Force.

Now that the 2 position articles of the European Association for Cardio-Thoracic Surgery, American Association for Thoracic Surgery, Society of Thoracic Surgeons Task Force on Valve Labeling have been published,[1,2] we find ourselves on the threshold of reaping the benefits of these extensive deliberations. However, we are in the red zone but not across the goal line.

The focus of the joint American Association for Thoracic Surgery, European Association for Cardio-Thoracic Surgery, Society of Thoracic Surgeons Valve Labeling Task Force has been on uniformity of labeling with regard to dimensions, size, and hemodynamic performance. This second follow-up article[2] lays out the outcomes and decisions of the task force that will further aid surgeons in optimal valve selection with a clear elucidation of valve dimensions and hemodynamic performance.

CENTRAL MESSAGE

Implementation of the Task Force on Valve Labeling recommendations will require buy-in by manufacturers and familiarization with the data tables by surgeons.

Two further steps are needed before benefits of these efforts translate to surgeons and their patients.

1. Guideline implementation. The manufacturers of prosthetic heart valves need to buy-in to the concept of complete, frank, evidence-based labels for each type and size of valve. They not only need to adopt the recommended table but also need to fill in the data. This will include not only easily measured (now standardized) physical dimension data but also not so easy accurate, echocardiography-based assessments of functional valve

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Disclosures: J.A.E.: Principal, CoolSpine; Consultant for CryoLife; Data/Safety Monitoring Board for Terumo. P.A. reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication Oct 16, 2020; revisions received Nov 2, 2020; accepted for publication Nov 13, 2020; available ahead of print Nov 19, 2020.

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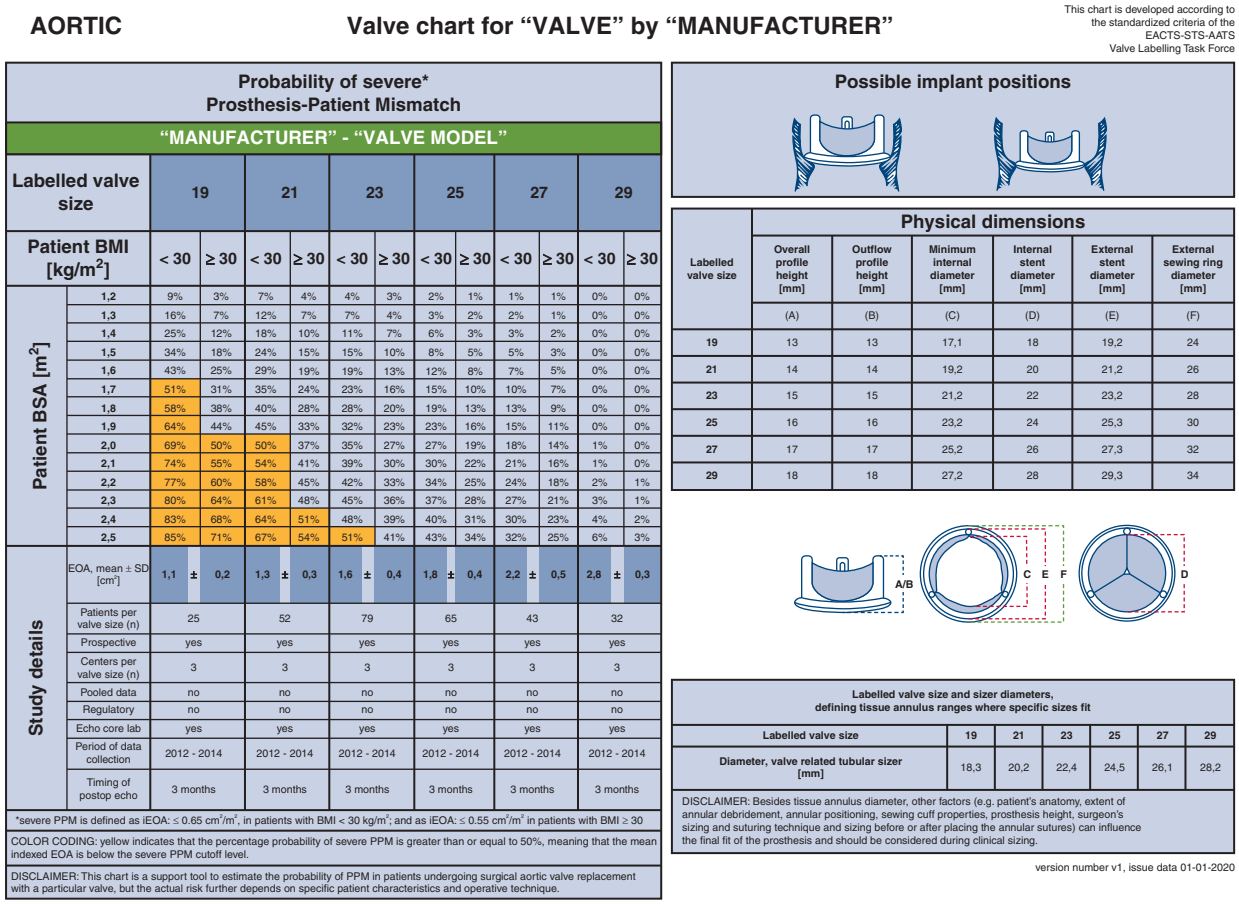
J Thorac Cardiovasc Surg 2021;161:562-4
0022-5223/$36.00

https://doi.org/10.1016/j.jtcvs.2020.11.015



AORTIC

Valve chart for "VALVE" by "MANUFACTURER"

This chart is developed according to the standardized criteria of the EACTS-STS-AATS Valve Labelling Task Force

Probability of severe* Prosthesis-Patient Mismatch

"MANUFACTURER" - "VALVE MODEL"

Labelled valve size		19		21		23		25		27		29	
Patient BMI [kg/m²]		< 30	≥ 30	< 30	≥ 30	< 30	≥ 30	< 30	≥ 30	< 30	≥ 30	< 30	≥ 30
Patient BSA [m²]	1,2	9%	3%	7%	4%	4%	3%	2%	1%	1%	1%	0%	0%
	1,3	16%	7%	12%	7%	7%	4%	3%	2%	2%	1%	0%	0%
	1,4	25%	12%	18%	10%	11%	7%	6%	3%	3%	2%	0%	0%
	1,5	34%	18%	24%	15%	15%	10%	8%	5%	5%	3%	0%	0%
	1,6	43%	25%	29%	19%	19%	13%	12%	8%	7%	5%	0%	0%
	1,7	51%	31%	35%	24%	23%	16%	15%	10%	10%	7%	0%	0%
	1,8	58%	38%	40%	28%	28%	20%	19%	13%	13%	9%	0%	0%
	1,9	64%	44%	45%	33%	32%	23%	23%	16%	15%	11%	0%	0%
	2,0	69%	50%	50%	37%	35%	27%	27%	19%	18%	14%	1%	0%
	2,1	74%	55%	54%	41%	39%	30%	30%	22%	21%	16%	1%	0%
	2,2	77%	60%	58%	45%	42%	33%	34%	25%	24%	18%	2%	1%
	2,3	80%	64%	61%	48%	45%	36%	37%	28%	27%	21%	3%	1%
	2,4	83%	68%	64%	51%	48%	39%	40%	31%	30%	23%	4%	2%
	2,5	85%	71%	67%	54%	51%	41%	43%	34%	32%	25%	6%	3%
Study details	EOA, mean ± SD [cm²]	1,1 ± 0,2		1,3 ± 0,3		1,6 ± 0,4		1,8 ± 0,4		2,2 ± 0,5		2,8 ± 0,3	
	Patients per valve size (n)	25		52		79		65		43		32	
	Prospective	yes		yes		yes		yes		yes		yes	
	Centers per valve size (n)	3		3		3		3		3		3	
	Pooled data	no		no		no		no		no		no	
	Regulatory	no		no		no		no		no		no	
	Echo core lab	yes		yes		yes		yes		yes		yes	
	Period of data collection	2012 - 2014		2012 - 2014		2012 - 2014		2012 - 2014		2012 - 2014		2012 - 2014	
	Timing of postop echo	3 months		3 months		3 months		3 months		3 months		3 months	

*severe PPM is defined as iEOA: ≤ 0.65 cm²/m², in patients with BMI < 30 kg/m²; and as iEOA: ≤ 0.55 cm²/m² in patients with BMI ≥ 30

COLOR CODING: yellow indicates that the percentage probability of severe PPM is greater than or equal to 50%, meaning that the mean indexed EOA is below the severe PPM cutoff level.

DISCLAIMER: This chart is a support tool to estimate the probability of PPM in patients undergoing surgical aortic valve replacement with a particular valve, but the actual risk further depends on specific patient characteristics and operative technique.

Possible implant positions

Labelled valve size	Physical dimensions					
	Overall profile height [mm]	Outflow profile height [mm]	Minimum internal diameter [mm]	Internal stent diameter [mm]	External stent diameter [mm]	External sewing ring diameter [mm]
	(A)	(B)	(C)	(D)	(E)	(F)
19	13	13	17,1	18	19,2	24
21	14	14	19,2	20	21,2	26
23	15	15	21,2	22	23,2	28
25	16	16	23,2	24	25,3	30
27	17	17	25,2	26	27,3	32
29	18	18	27,2	28	29,3	34

Labelled valve size and sizer diameters, defining tissue annulus ranges where specific sizes fit

Labelled valve size	19	21	23	25	27	29
Diameter, valve related tubular sizer [mm]	18,3	20,2	22,4	24,5	26,1	28,2

DISCLAIMER: Besides tissue annulus diameter, other factors (e.g. patient's anatomy, extent of annular debridement, annular positioning, sewing cuff properties, prosthesis height, surgeon's sizing and suturing technique and sizing before or after placing the annular sutures) can influence the final fit of the prosthesis and should be considered during clinical sizing.

version number v1, issue data 01-01-2020

FIGURE 1. Standardized valve chart for aortic valves, which provides essential information on surgical heart valve characteristics in a uniform manner and allows for comparability between different surgical heart valve models without demanding radical changes in current surgical heart valve designs or labeling. *BMI*, Body mass index; *BSA*, body surface index; *PPM*, patient–prosthesis mismatch. Reprinted with permission from Durko and colleagues.[2]

size and anticipated gradients for each size valve and particular patient. In most cases, the manufacturers will have adequate data on hand. The task force has called for a minimum of 30 Doppler echocardiograms providing in vivo human data on mean transprosthetic gradient and effective orifice area for each valve in every size. The task force has further stipulated that these data must be accrued within 30 days and 1 year after implantation. If such information is not already available, additional clinical studies will be required of the manufacturer. Furthermore, the manufacturer must include in the charts a patient–prosthesis mismatch (PPM) calculating nomogram. This plots the likelihood of PPM for the proposed valve for each patient's body surface area (Figure 1).

2. Surgeon use. The charts are designed for both completeness and ease of use. The surgeon finds the chart (externally available on the boxes and in paper and computer information sheets) for the valve he is considering. He plots the valve size along the upper horizontal axis and the patient's body surface area along the left vertical axis. The color code lets the surgeon know the likelihood of severe PPM. A yellow color indicates a 50% or greater likelihood of PPM. The surgeon can modify his valve choice accordingly. The accompanying schematic diagram shows the prosthetic valve in position, with the physical dimensions of the valve indicated.

Cardiac surgeons and manufacturers generally have a positive and strong relationship because they have the shared goals of patient perioperative safety, long-term survival, and good symptomatic state. We anticipate enthusiastic "buy-in" from the manufacturers for this novel approach, especially because they had vocal seats at the table during the task force discussions and expressed full engagement in the goals and plans, in many cases helping us determine feasible approaches to maximize an educated decision on valve choice for our patients. We hope that surgeons find ease and reassurance in using these new tools.

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