mandatory to improve CV care. Our survey underscores the need for close collaboration between cancer specialists and cardiologists, further specific education, and more resources to allow the existence of a well-established cardio-oncology structure.

The limitations of our study are the response rate and the heterogeneous distribution of respondents among the specialties.

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SUPPLEMENTARY MATERIAL

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REFERENCES

1. Lopez-Fernandez T, Martin Garcia A, Santaballa Beltran A, et al. Cardio-Onco-Hematology in Clinical Practice. *Position Paper and Recommendations Rev Esp Cardiol.* 2017;70:474–486.
2. Wang SY, Long JB, Hurria A, et al. Cardiovascular events, early discontinuation of trastuzumab, and their impact on survival. *Breast Cancer Res Treat.* 2014;146:411–419.
3. Barac A, Murtagh G, Carver JR, et al. Cardiovascular health of patients with cancer and cancer survivors: a roadmap to the next level. *J Am Coll Cardiol.* 2015;65:2739–2746.
4. Sulpher J, Mathur S, Lenihan D, et al. An International Survey of Health Care Providers Involved in the Management of Cancer Patients Exposed to Cardiotoxic Therapy. *J Oncol.* 2015;2015:391848.

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Are Dentists in Our Environment Correctly Following the Recommended Guidelines for Prophylaxis of Infective Endocarditis?

¿Los odontólogos de nuestro medio siguen correctamente las pautas de profilaxis de endocarditis infecciosa recomendadas?

To the Editor,

Infective endocarditis (IE) is a serious infection, with a very high mortality rate; prevention is essential. Before the publication of the North American clinical practice guidelines (CPG) in 2007[1] and the European guidelines in 2009,[2] IE prophylaxis was recommended for patients with high or moderate risk heart disease. In those CPGs, the indications were limited to patients with high risk of IE (previous IE, valve replacements, cyanotic congenital heart disease, or congenital heart disease repairs with prosthetic material) and only in certain dental procedures or manipulations.[1,2] The 2008 British NICE guidelines recommended no IE prophylaxis in any situation.[3] In the most recent European CPG from 2015, recommendations were unchanged from 2009.[4] These differences could lead to uncertainty about the approach to patients with possible risk of IE, as was already suggested by a previous study carried out in Spain.[5] Out aim was to describe the current practice of dentists in view of these recommendations and analyze whether the approaches were uniform in 2 Spanish provinces.

One-hundred dentists from Córdoba and 100 from Seville were invited to complete a questionnaire on IE prophylaxis, via the Official College of Dentists of Córdoba and the Faculty of Dentistry of the University of Seville. The questionnaire was completed in full by 142 dentists; 62 in Seville and 80 in Córdoba (71% of all those invited; 62% in Seville and 80% in Córdoba). The chi-square test was used for comparisons between groups. $P < .05$ was considered statistically significant. There were no differences between the 2 provinces regarding the dentists' age (44 ± 9 years in Seville vs 45 ± 10 years in Córdoba), years of practice (16 ± 5 vs 17 ± 5 in Córdoba) or sex (61.3% female in Seville and 51.2% in Córdoba, difference not statistically significant). Almost all (95.2%) of the respondents in Seville and 98.8% of those in Córdoba used prophylaxis in their everyday practice. Table 1A shows the dental procedures for which IE prophylaxis is indicated for at-risk patients. In most situations with a clear indication (surgery, implants, extractions, endodontics) or without indication (X-rays, anesthesia, removal of sutures, taking impressions for a prosthesis, fitting a removable prosthesis and orthodontic brackets), there was high compliance with the recommendations, except for endodontics and dental cleanings, in which antibiotic use was lower than recommended, and local anesthetic, in which use was higher than recommended (Table 1A).

Table 1B shows the heart conditions for which IE prophylaxis should and should not be used in dental interventions that carry risk.

Table 1
Prescription of Infective Endocarditis Prophylaxis by Dentists in At-risk Patients According to Indication, Lack of Indication, Dental Procedure and Manipulations, and Type of Cardiac Disease

A. Dental procedures and manipulations	Seville	Córdoba	*P*
Indicated in CPGs			
Oral/gingival surgery	96.8%	98.7%	.410
Dental implants	96.8%	100%	.104
Dental cleaning	69.4%	70.9%	.770
Endodontics	66.1%	59.5%	.401
Tooth extractions	96.8%	100%	.104
Not indicated in CPGs			
Taking impressions for fixed or implant prostheses	14.5%	8.9%	.269
Taking impressions for removable prostheses	6.5%	3.8%	.450
Fitting of removable prostheses	8.1%	1.3%	.054
Fitting of orthodontic brackets	3.2%	3.8%	.877
Fillings	8.1%	10.1%	.709
Local anesthetic	14.5%	22.8%	.104
Intraoral X-rays	3.2%	1.3%	.410
B. Heart disease	**Seville**	**Córdoba**	***P***
Currently indicated in CPGs			
Valve replacement	96.8%	94.9%	.613
Previous infective endocarditis	96.8%	100%	.104
Cyanotic congenital heart disease or congenital heart disease repaired with prosthetic material	90.3%	86.1%	.185
Previously but no longer indicated in CPGs			
Significant aortic valve disease	87.1%	84.4%	.598
Significant mitral valve disease	88.7%	84.4%	.416
Pacemaker or ICD	38.7%	40.5%	.806
Congenital heart disease with complete correction	82.3%	72.2%	.185
Never indicated			
Coronary stent	56.5%	67.1%	.160
Aortocoronary bypass	67.7%	69.6%	.736
Mild mitral prolapse	48.4%	58.2%	.318
Closed ASD, VSD, or ductus with no residual defect	66.1%	67.1%	.823
Atrial fibrillation without structural heart disease	16.1%	36.7%	.055

ASD, atrial septal defect; CPG, European or North American clinical practice guidelines; ICD, implantable cardioverter-defibrillator; VSD, ventricular septal defect.

Of note is that in the 3 indications currently established by the North American and European CPGs (valve replacement, previous IE, cyanotic congenital heart disease or congenital heart disease repaired with prosthetic material), a very high proportion of dentists from both provinces used prophylaxis (Table 1B). In the case of prior indications that are no longer recommended, such as significant mitral or aortic valve disease, prophylaxis continues to be used by a very high proportion, as can be seen in Table 1B. However, even in situations without risk or with very low risk of IE (aortocoronary bypass, stents, isolated atrial fibrillation, mild mitral prolapse, closed interatrial or interventricular defects or ductus with no remaining defects) for which IE prophylaxis has never been recommended, it was prescribed by 50% to 70% of the dentists (Table 1B), with no differences between the 2 provinces studied.

Table 2 shows the antibiotic regimens used for IE prophylaxis. A total of 35% of the dentists in Seville and 36.7% of those in Córdoba used different antibiotics to those recommended (amoxycillin 2 g as a single dose 1 h before procedure). When asked about which micro-organisms they hoped to eradicate with IE prophylaxis, only 9.7% of the Seville dentists and 18.0% of the Córdoba dentists responded *Streptococcus viridans* only, while 92.3% and 88%, respectively, thought that they were eradicating other micro-organisms, such as enterococcus, staphylococcus, and Gram-negative bacilli.

Table 2
Prophylactic Antibiotic Regimens Used in Patients With and Without Beta-lactam Allergy

	Seville	Córdoba	*P*
First-line antibiotic for patients with no allergy to beta-lactams			.396
Amoxicillin	71.0%	77.2%	
Amoxicillin-clavulanic acid	24.2%	22.8%	
Other (cephalosporins, clindamycin)	4.8%	0	
First-line antibiotic for patients with allergy to beta-lactams			.218
Clindamycin	82.3%	67.1%	
Cephalosporins	4.8%	8.9%	
Other (amoxicillin, metronidazole)	18.9%	23.0%	
Antibiotic dosing regimen			.264
Single-dose. 1 h before	69.4%	54.4%	
Two doses. 1 h before and 6 h after	16.1%	30.4%	
Other	14.5%	15.2%	
Doses for single-dose amoxicillin			
2 g	64.5%	63.3%	.229
1 g	24.2%	27.8%	
Other doses	11.3%	8.9%	

The main conclusion of our study is that there is a notable knowledge gap and noncompliance with the current recommendations on IE prophylaxis among dentists in our setting, with overuse in patients in whom it is not currently recommended and, above all, in patients without risk of IE after dental procedures (those with coronary stents, aortocoronary bypass, mild mitral prolapse or even atrial fibrillation without structural disease). This could be an example of what has been described as the "no lose" philosophy.[6] With the limitations of this study, which are those inherent to a voluntarily-completed questionnaire, it appears that there is a notable knowledge gap among dentists in our setting about important aspects of the recommended IE prophylaxis regimens. This translates to an excessive use of antibiotic prophylaxis in patients not at risk of IE. This knowledge gap was similar and uniform in the 2 provinces studied. It therefore seems necessary to develop educational strategies on this disease for all the professional groups involved. To achieve this, the coordination and collaboration of all the related scientific societies will be essential.

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REFERENCES

1. Wilson W, Taubert K, Gewitz M, et al. Prevention of infective endocarditis. Guidelines from the American Heart Association. *Circulation.* 2007;116:1736–1754.
2. Habib G, Hoen B, Tornos P, et al. The Task Force for the prevention, diagnosis and treatment of infective endocarditis of the ESC. *Eur Heart J.* 2009;30:2369–2413.
3. Richey R, Wray D, Stokes T. Prophylaxis against infective endocarditis: summary of NICE guidance. *BMJ.* 2008;336:770–771.
4. Habib G, Lancellotti P, Antunes MJ, et al. Task Force for the Management of infective endocarditis of the ESC. 2015 Guidelines for the management of infective endocarditis. *Eur Heart J.* 2015;36:3075–3128.
5. González de Molina M, Fernández-Guerrero JC, Azpitarte J. Infectious Endocarditis: Degree of Discordance Between Clinical Guidelines Recommendations and Clinical Practice. *Rev Esp Cardiol.* 2002;55:793-780.
6. Shaw D, Conway DI. Pascal's Wager, infective endocarditis and the "no-lose" philosophy in medicine. *Heart.* 2010;96:15–18.

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Transaxillary Implantation of the Impella CP Mechanical Circulatory Support Device as a Bridge to Heart Transplant. First Experience in Spain

Implante transaxilar del dispositivo de asistencia circulatoria Impella CP como puente al trasplante cardiaco. Primera experiencia en España

To the Editor,

Over the years, there has been an increase in the number of patients on circulatory assist devices who require urgent heart transplantation (HTx).[1]

The short-term Impella CP left ventricular assist device (Abiomed; Danvers, Massachusetts, United States) is a continuous-flow axial pump placed across the aortic valve that drives the blood directly from the left ventricle toward the ascending aorta.[2] Conventional implantation of the device is by femoral access through a 14-Fr catheter, and it provides a maximum theoretical flow rate of 4 L/min, although the rate in vivo does not usually exceed 3.5 L/min. In the product insert, the recommended duration of ventricular support is < 7 days. The device has been successfully used in Spain as a bridge to HTx.[3] According to data from the Spanish Transplant Organization Registry, 73% of patients categorized as HTx urgency 0 wait 10 days or less for transplantation.[4] Nonetheless, time on the HTx waiting list is unpredictable in individual patients and has been seen to increase in the last few years.[1] Use of the femoral access requires immobilizing the patient during the wait prior to HTx, making rehabilitation more difficult and increasing the risk of complications following the procedure.

Abiomed has designed a kit for transaxillary implantation of the Impella 2.5, Impella CP, and Impella 5.0 devices. Studies in humans support the use of Impella 5.0 and Impella CP for the treatment of cardiogenic shock,[3] although the Impella 5.0 system requires larger caliber catheters (21 Fr), with a potential risk of vascular complications.

We report on 4 patients who received an Impella CP as a bridge to HTx using a transaxillary approach between March and December 2016, with follow-up to 31 May 2017. We analyzed survival, the duration of mechanical ventilation following HTx, length of ICU stay, and adverse events such as bleeding and infection. Impella CP implantation was carried out in the surgical theater using a right infraclavicular incision to expose the axillary artery. Following heparin administration, an end-to-side anastomosis of a Dacron graft (10 mm) to the artery was performed. The device introducer was inserted through the graft and secured with the graft lock, and a rigid guidewire was advanced to the left ventricle. The device was then mounted on the guidewire (monorail system) and advanced to the correct position with the aid of fluoroscopy and transesophageal echocardiography guidance (Figure A).

The patient characteristics and study variables are shown in Table. All patients were extubated following Impella CP implantation, and a prompt rehabilitation program was started (kinesiotherapy, physiotherapy, and active movements) during support with the device. The median time assistance was required was 13.5 [interquartile range, 11.25-15.5] days. Anticoagulation was performed with a solution of dextrose 5% and heparin at a concentration of 50 IU/mL. HTx was successfully carried out, and the 4 patients were discharged after a mean ICU stay of 7.5 [5.5-9.75] days and a median time to hospital discharge of 29.5 [26-33.5] days following HTx. The main postprocedure complications were 1 case of cardiac tamponade at 9 days following HTx and 1 case of ischemic stroke in a patient with significant bilateral carotid stenosis, who recovered without sequelae. After a median follow-up of 363 days, all patients were alive and in functional class I.

To our knowledge, this is the first experience presented in Spain of Impella CP implantation using a transaxillary approach as a bridge to HTx. Although the mean duration of ventricular support was longer than recommended, there were no cases of device dysfunction and only 1 patient (No. 3) experienced hemolysis, evidenced by haptoglobin consumption on the tenth day of support, with no clinical repercussions. This event was resolved by adjusting the revolutions on the Impella CP. None of the devices