



Infective Endocarditis

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Abstract:

Infective endocarditis is an infection of the inner lining of the heart, frequently involving the heart valves. Dental health professionals must have a thorough understanding of this serious, albeit rare, infection of the heart because some dental and dental hygiene procedures in at-risk patients may increase the risk of this potentially life-threatening infection. Sequela of an infective endocarditis infection may lead to heart failure, stroke, heart valve damage requiring valve replacement or death.¹

American Heart Association Guidelines:

Clindamycin is no longer recommended to be taken as a prophylactic antibiotic to prevent IE. The rationale for this change is that Clindamycin has been found responsible for frequent and severe reactions compared to other antibiotics in this prophylaxis regimen.¹ It has been reported that a single dose of Clindamycin can cause a *Clostridioides difficile* infection, which can lead to serious complications or death.¹ Up to 15% of *Clostridium difficile* infections may be attributable to antibiotics prescribed for a dental procedure.¹ Clindamycin comes with a black box warning that the drug can cause severe diarrhea due to the bacteria *Clostridioides*.

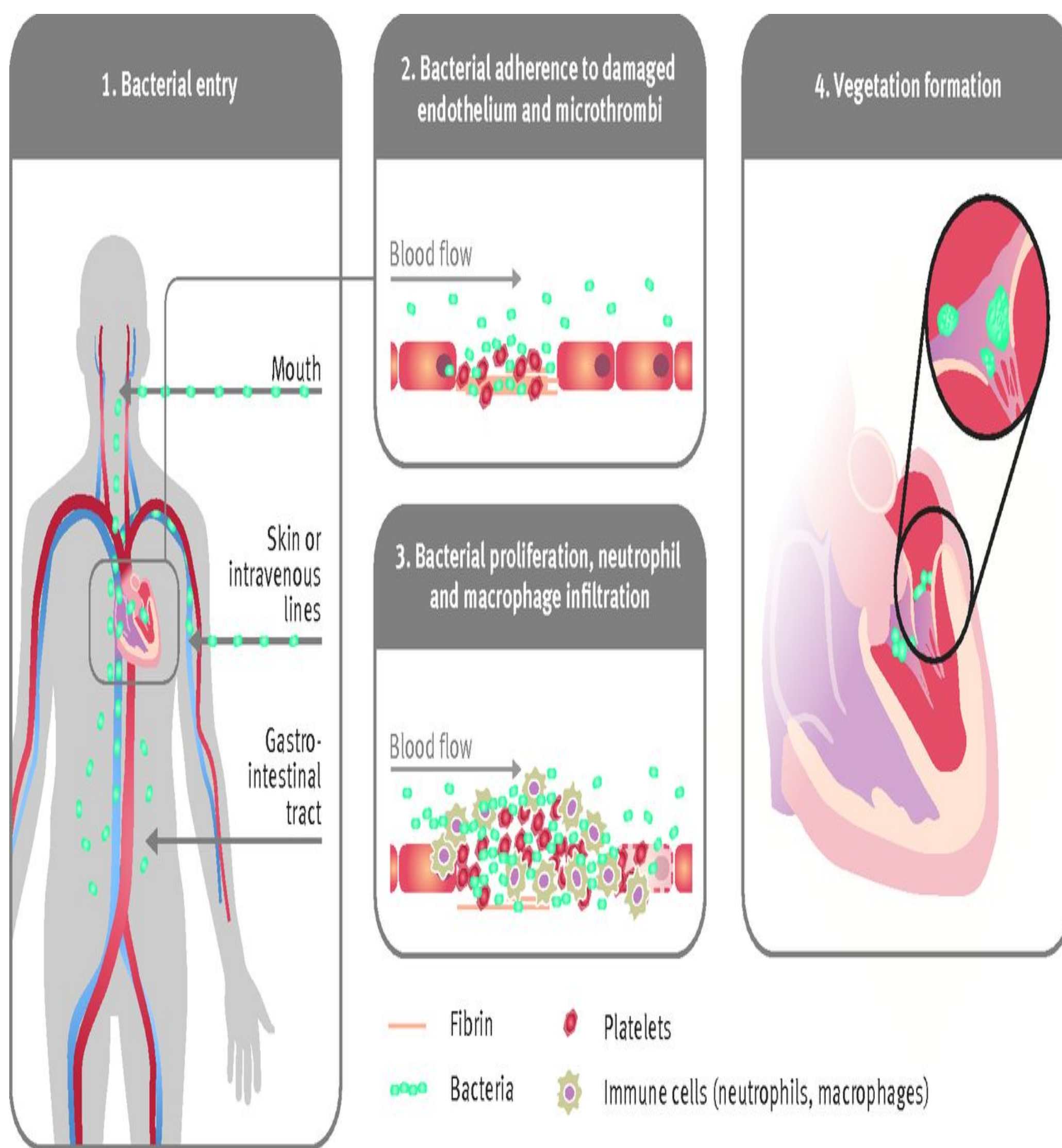
American Heart Association Antibiotic Guidelines in 2021

Initial Treatment Options	
30-60 minutes prior to procedure:	
• Oral	<ul style="list-style-type: none"> Amoxicillin Penicillin or ampicillin allergy: cephalexin*, azithromycin or clarithromycin, doxycycline
• Intravenous	<ul style="list-style-type: none"> Ampicillin, cefazolin, or ceftriaxone Penicillin or ampicillin allergy: cefazolin or ceftriaxone[†]
*Or other first- or second-generation cephalosporin	
[†] Avoid cephalosporins in patients with a history of anaphylaxis, angioedema, or urticaria to penicillin or ampicillin	

American Heart Association Antibiotics Guidelines in 2017

SITUATION	AGENT	REGIMEN: SINGLE DOSE 30-60 MINUTES BEFORE PROCEDURE	
		Adults	Children
Oral	Amoxicillin	2 grams	50 milligrams per kilogram
Unable to Take Oral Medication	Ampicillin OR Cefazolin or ceftriaxone	2 g IM* or IV [†]	50 mg/kg IM or IV
		1 g IM or IV	50 mg/kg IM or IV
Allergic to Penicillins or Ampicillin Oral	Cephalexin [‡] OR Clindamycin	2 g	50 mg/kg
	Azithromycin or clarithromycin	600 mg	20 mg/kg
Allergic to Penicillins or Ampicillin and Unable to Take Oral Medication	Cefazolin or ceftriaxone [‡] OR Clindamycin	500 mg	15 mg/kg
		1 g IM or IV	50 mg/kg IM or IV
		600 mg IM or IV	20 mg/kg IM or IV

* IM: Intramuscular.
[†] IV: Intravenous.
[‡] Or other first- or second-generation oral cephalosporin in equivalent adult or pediatric dosage.
[§] Cephalosporins should not be used in a person with a history of anaphylaxis, angioedema or urticaria with penicillins or ampicillin.



Etiology

Infective endocarditis occurs when a combination of factors are present. These factors include an injured (roughened) endothelial lining, a damaged or roughed heart valve, a host immune response, and bacteremia in the systemic circulation. Infective endocarditis begins with a segment of the heart which has an altered lining or valve which generates a host immune response creating the formation of a Non-Bacterial Thrombotic Endocarditis (NBTE). NBTE occurs when there is inflammation or injury of the endothelial cells and the collagen tissue adheres to platelets and fibrins which causes a blood clot. Microbial pathogens may enter the bloodstream whenever there is a disruption in the integrity of the dermis via an open skin wound, needle puncture, or surgical procedure, as well as bacteremia from an internal source such as a body abscess and dental infections.² NBTE lesion transitions from a non-infected tissue to infected tissue once the volume of the bacteremia in bloodstream seeds the NBTE transiting it to an infective endocarditis.

Oral Health The Role of the Dental Hygienist:

As the dental hygienist it is important to focus on oral health to decrease the bacteria within the periodontal pockets that leads to the bacteremia. From a dental hygienist perspective, promoting and maintaining oral health is the best way to decrease the risk of infective endocarditis in our patients.¹ An effective way to disrupt the biofilm is to emphasize the use of power-assisted toothbrushes, which reduce more oral inflammation compared to manual toothbrushes.³

Flossing and other interdental devices will reduce dental plaque and biofilm accumulation in combination with toothbrushing. Oral rinses should be used in addition to toothbrushing and flossing to decrease biofilm in the oral cavity. Implementing oral health practices decreases the viridians group Streptococcal more effectively than a single dental procedure.

Streptococcus viridians IE is much more likely to be caused by transient streptococcus viridians bacteremia from an oral source resulting from daily routine activities like chewing, brushing, and flossing in inflamed gingival tissue than from a dental procedure.¹ Transient bacteremia is frequent with chewing food (7-51%), toothbrushing (20-68%) using a wooden tooth (20-40%) and water irrigation device (7-50%).⁴ As per the AHA in 2007, it is stated that bacteremias from chewing food (7-51%) can range indicating that in the presence of inflammation and periodontal disease more bacteria will enter into the circulatory system. As the dental hygienist it is important to focus on oral health to decrease the bacteria within the periodontal pockets that leads to the bacteremia.

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Images:
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