val hygiene—reddening, swelling without provoked bleeding along the marginal gingiva of all maxillary teeth, and well-circumscribed reddening involving palatal attached gingiva. Because of the positive blood culture for streptococci and suspecting the fixed orthodontic appliance as the source of infection, the appliance was removed and samples for culture were obtained from appliance clasps and gingiva. These cultures detected the same streptococci as previously identified in the blood cultures.2–4 Local antiseptic treatment and therapy with benzylpenicillin combined with netilmicin was given. The patient remains well.

Dental procedures are the most common factors associated with increased risk of IE and streptococci are the most common etiologic agents. Our report does not definitely prove, but strongly suggests, that the patient’s fixed orthodontic appliance was a factor predisposing to IE and that fixed orthodontic appliance needs to be considered in patients with endocarditis.

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Do Infants and Toddlers Prefer Nasal Swabs or Washes for Specimen Collection?

To the Editors:

Nasal secretions are commonly collected for viral testing using either bulb suction devices and saline, or nasal swabs. Infant preferences between these have not, to our knowledge, been formally tested. We performed a prospective crossover study comparing a bulb suction method for collection of secretions with a mid-turbinate (2.5 cm) nasal flocked swab (Copan Diagnostics, Murrieta, CA).1,2 We compared FLACC (face, legs, activity, crying, consolability) scores before, during, and after each method.3 Infants were allowed to settle for 2 minutes between methods. The order of methods was randomized. We enrolled children up to 18 months of age. The staff were trained to use the FLACC score before the study.

We performed the sign test of matched pairs testing the null hypothesis that the difference in scores for each method was zero. We addressed washout effect, order, and patient level variables by constructing mixed effects models with FLACC score as the dependent variable. In the first model, we used age, method (swab or nasal wash), time at which the score was recorded (before, during, or after the procedure), and interactions of these as the fixed effects. We modeled random effects of these at the level of the individual patient.

We enrolled 239 children. After exclusions, we were able to analyze the results of 221. Of the 221 children, 103 (46.6%) had a change in FLACC score favoring nasal swabs; 52 (23.4%) had a change in FLACC score favoring nasal washes; and 66 (29.9%) showed no preference. The sign test of matched pairs (testing the null hypothesis that the differences in scores for each method was zero) was also significant (P = 0.0001). Mixed effects multilevel modeling showed that swabs were associated with a lower FLACC score than nasal washes (P = 0.002). The results are summarized in Figure 1. We did not find a rater-nurse pairing effect.

Preference studies typically attempt to determine the preference of the typical consumer, so that a single standard approach or product can be created that most people will prefer. We have done this here in a fairly sophisticated way using a multilevel mixed-effects model. This shows a statistically significant benefit of using the swabs and allows us to create a “typical infant” and show a 1- or 2-point benefit of using the swabs with greater benefit in older children.

Although we now know what the average infant prefers, for an individual patient being treated the important question may be: “Does he belong to the group of children who preferred swabs, washes, or had no preference?” We could not find predictors to answer this despite our modeling. This dilemma has long been recognized by the food industry and a brief description of it is available.4

Therefore, unless aware of the infant’s preference from a prior visit, using

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FIGURE 1. Graph showing difference in FLACC score between each method for each child (For ease of interpretation the patients have been sorted in order of score and a new ID assigned).
the preferences of the typical patient, ie, a swab rather than a nasal wash seems reasonable.

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