Vuvuzela sound measurements

To the Editor: Our recent paper in the *SAMJ*[1] reported the maximum output levels of a vuvuzela at various distances from the horn. In response to enquiries, we provide additional information on the method and results reported in the earlier paper.

One commercial vuvuzela was used in the recording of sound levels at 4 different positions: (*i*) at the ear of the person blowing the vuvuzela; (*ii*) at the bell end; (*iii*) 1 m from the bell end; and (*iv*) 2 m from the bell end. All measurements were made approximately 1.6 m from the ground, in an open-air setting. Sound levels were measured twice at a single instance while the vuvuzela was being blown by one of the investigators. Measurements were made using a calibrated Type 1 Larson Davis SLM 824 sound level meter with a 2559 normal sensitivity microphone fitted with a manufacturer-supplied windscreen (WS001). Measurements were made using the fast response time option, which corresponds to a time constant of 0.125 s that is intended to approximate the time constant of human hearing.[2]

The initial report[1] provided the maximum instantaneous A-weighted sound pressure level (Lmax Fast [dBA]) averaged for 2 recordings during single vuvuzela blasts at 4 distances from the bell of the vuvuzela. This method is in agreement with the recommendation by the World Health Organization[2] for measuring individual sound events. A-weighting was used for all measurements to compensate for the non-linear sensitivity of the human ear, which is differentially sensitive to sound across the frequency spectrum (least sensitive at very high and very low frequencies). A breakdown of the average intensities at individual frequencies across the frequency spectrum is provided in Table I. A characteristically flat frequency spectrum was evident between 250 and 8 000 Hz. The average intensity difference between the individual frequency measurements (Table I) of the 2 recordings at each of the 4 respective distances from the bell of the vuvuzela was 0.6 dB (±3.2 dB standard deviation).

These measures provide an indication of the sound levels and frequency spectrum of a typical vuvuzela. There are now numerous types of vuvuzela made by several manufacturers, which may all produce varying intensity and frequency outputs. In addition to these variables, individuals blowing a vuvuzela will produce varying intensities depending on their technique and the pressure exerted. Also, the sound level produced by multiple individuals simultaneously blowing vuvuzelas within a limited space cannot be predicted from these data.

Table I. Average vuvuzela intensity measurements across frequencies at 4 distinct distances from the bell end of the vuvuzela (dBA)

Frequency (Hz)	Intensity (dBA)			
	At ear	Bell opening	1 m	2 m
125	36	62	38	35
250	92	106	82	85
500	103	121	102	101
1 000	106	122	108	100
2 000	101	122	110	101
4 000	97	109	110	102
5 000	93	111	109	100
8 000	87	110	107	98

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1. Swanepoel D, Hall JW III, Koekemoer D. Vuvuzela – good for your team, bad for your ears. *S Afr Med J* 2010; 100: 99-100.
2. Berglund B, Lindvall T, Schwela DH, Goh KT, eds. *Guidelines for Community Noise. Technical Report*. Geneva: World Health Organization, 1999.

Pandemic flu (H1N1) 2009 and pregnancy

To the Editor: We welcome the recommendations by Schoub *et al*.[1] and advertisements in local newspapers highlighting the importance of influenza vaccination (*Cape Times* 17 February 2010), but are concerned that there is no unified strategy to ensure that all pregnant women are offered influenza vaccine and have access to antivirals should they develop symptoms of infection.

A striking feature of the pandemic H1N1 infection has been the predilection of severe disease in pregnant women. This is not surprising as pregnancy causes immunological and physiological changes which are likely to contribute to an increased susceptibility to influenza infection and an excessive risk of influenza-related morbidity and mortality.[2] We have previously highlighted the problem of H1N1 in South Africa in pregnant women.[3]

Antivirals oseltamivir and zanamivir are effective against H1N1, and both may be used in pregnancy.[2] Despite a lack of formal trials in pregnancy, both have been widely used in the second and third trimester without proven adverse effects on the mother or teratogenic effects on the unborn child. Their use is justified on the basis that the potential benefit to the mother outweighs any potential risk to the fetus.[4] However, antiviral therapy must be initiated early to be effective, posing a considerable logistical challenge.[5] Vaccination is the most important weapon in preventing influenza infection and its sequelae in pregnant women. Pregnant women have been prioritised for vaccination in industrialised countries during the 2009/2010 season. The inactivated influenza vaccine is void of harmful effects on maternal or neonatal health.[6] Since pandemic H1N1 vaccines are produced using the same manufacturing and licensing process as seasonal influenza