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and recent immigrants from Western Africa than among other black patients. Such patients tend to have a “resistant” hypertension, with or without a susceptibility to hypokalemia, and typically have a good response to the addition of spironolactone or amiloride.

In clinics serving such populations, following Young’s recommendations, especially in the case of older patients who have an increased coincidence of silent adrenal nodules, could lead to unnecessary invasive diagnostic procedures such as adrenal venous sampling. Therefore, clinical considerations, not just hormonal data, should guide the choice of further interventions.

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**Urine Fluorescence in Ethylene Glycol Poisoning**

**TO THE EDITOR:** With regard to the Image in Clinical Medicine by McStay and Gordon (Feb. 8 issue), the presence of urine fluorescence can be short lived, less than 4 hours from the time of ingestion. This brief duration poses the potential for false negative results. Not all brands of antifreeze contain fluorescein as a colorant for the detection of radiator leaks. Other researchers have reported that urine specimens from children may fluoresce without an exposure to antifreeze. A database lists 148 substances, including a number of drugs, food products, toxins, and endogenous compounds, that can contribute to urine fluorescence and the potential for false positive results.

Urine fluorescence as an adjunctive tool in the evaluation of ethylene glycol ingestion may be helpful, but physicians should be aware of the considerable limitations of this test, including both false negative and false positive results.

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**TO THE EDITOR:** McStay and Gordon report on a patient with antifreeze (presumably ethylene glycol) intoxication. The urine of their patient showed blue fluorescence under ultraviolet excitation. Fluorescein is a chromophore with a high quantum yield of fluorescence. Therefore, assessment of urine fluorescence was suggested in cases of suspected ethylene glycol intoxication. The emission spectrum of fluorescein peaks at approximately 540 nm (green), and it is virtually absent below 500 nm (blue). Thus, the deep-blue urine fluorescence described by McStay and Gordon presumably originated from a fluorophore other than fluorescein. A number of unknown fluorophores may be assumed to be the source of the fluorescence observed. For instance, a strong blue fluorescence was observed after excitation with ultraviolet light for certain ion–chelate complexes. Only a strong green fluorescence points to fluorescein ingested with antifreeze. In a case of unusual fluorescence, as shown here, one should consider substances other than ethylene glycol as the source of intoxication.

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**THE AUTHORS REPLY:** We agree with Winter and Snodgrass and strongly caution clinicians against
making critical management decisions solely on the basis of urine fluorescence. This recommend-
dation is especially pertinent in the pediatric pop-
ulation, given the extremely high rate of fluo-
rescence in patients who have not been poisoned.1,2
Difficulties with positive and negative controls as well as interobserver variability are also impor-
tant considerations. We acknowledge that the re-
sult of our own bedside test could represent a
false positive finding from one or more fluoro-
phores, as Theelen points out. In a report by Parsa
et al., images of fluorescent urine samples from
children who have not been poisoned retain their
blue hue despite elevated levels of sodium fluo-
rescein.2

Given the lack of rapidly available testing for
ethylene glycol in many centers, we still believe
that urine fluorescence may have some use as an
adjuvant test in adults. Above all, we strongly urge
clinicians with questions regarding testing and
management of both suspected and confirmed
poisonings to consult with their local poison-
control center.

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Superior Athletic Performance Two Decades
after Cardiac Transplantation

TO THE EDITOR: Cardiac-transplant recipients
have a severely reduced exercise capacity (defined
as the maximum volume of oxygen consumed
\([\text{VO}_2]\text{max}\)), in part because of chronotropic incompe-
tence associated with cardiac denervation.1 The
upper limits of athletic performance and exercise
capacity in the long term after cardiac transplan-
tation are not clear. We report superior exercise ca-
pacity and athletic performance in a man two dec-
dades after he underwent cardiac transplantation.

The patient underwent cardiac transplantation
in August 1986, at 26 years of age. Other than a
history of post-transplantation hypertension that
was easily controlled with the use of calcium-
channel blockers, he has had an uneventful course
since the surgery, with no biopsy-proven or clini-
cal evidence of rejection. He has been physically
active, performing aerobic exercise 2 to 3 days
per week. In October 2004, at 45 years of age, he
participated in a 12-week exercise study at our
center. His peak \([\text{VO}_2]\text{max}\) after training (59 ml per
kilogram of body weight per minute) was similar
to the peak \([\text{VO}_2]\text{max}\) achieved by age-matched, endur-
ance-trained male athletes.2 He had a rapid in-
crease in heart rate from rest to peak exercise
(change in heart rate, 81 beats per minute), and
the rate returned toward baseline during recov-
er. His peak heart rate during exercise (177 beats
per minute) was similar to the rate among age-
matched healthy persons.3 Eighteen years after
the transplantation, he completed a half-Ironman
triathlon in 6 hours and 28.7 minutes (finishing
as the 454th of 558 competitors). A year later, he
completed the same triathlon in 6 hours and 15.9
minutes (416th of 611 competitors). He also com-
pleted an Olympic distance triathlon in 3 hours
and 2.1 minutes (75th of 126 competitors).

Cardiac-transplant recipients typically attain
their highest peak \([\text{VO}_2]\text{max}\) within the first year after
surgery.4 In contrast, our patient’s experience
illustrates that long-term aerobic training may
result in a dramatic improvement in exercise ca-
pacity. One contributing factor is that his heart-
rate response to stress was similar to that in
cardiac-transplant recipients who have functional
evidence of cardiac reinnervation.5 This patient's
history shows that superior athletic performance
can be achieved two decades after cardiac trans-
plantation.

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