Sunscreen application: Not less, not more

Sir,

Sunscreens are being increasingly used all over the world. Information regarding quantity of sunscreen to be used during each application is not easily available. The prescribed amount, 2 mg/cm^2 makes little practical sense to the patient. Studies have shown that consumers apply much less than this,[1-5] typically between 0.5 and 1.5 mg/cm^2. We undertook the study to evolve a practical, simple, and rapid guide, to advice patients on the quantity of the sunscreen to be used during each application. The study was conducted on 10 male and 10 female volunteers. The area of the face was measured by placing a wet thread along the outer margin of the face [Figure 1]. The length of the thread was measured in centimeters. We assumed that the circumference of the face would be nearly equal to the circumference of the thread, if arranged as a circle. The radius and the area of the circle was calculated by dividing the circumference by 2π. The area of the face was then calculated by using the formula πr^2. Since 2 mg/cm^2 is the recommended dose of sunscreen for topical application, and 2 mg/cm^2 is equal to 2 micro liter/cm^2, the area of the face was multiplied by 2 to determine the amount of sunscreen in micro liters, which was then converted to milliliters. The mean circumference of the face of 10 male volunteers was 100 cm, and of 10 female volunteers was 81 cm. The mean radius was determined as 15.9 cms for males, and 12.98 cms for females. Based on the circumference and radius, the area of the face was 793.82 sq cm for males, and 530.6 sq cm for females. Since 2 micro liter/sq cm is the quantity of sunscreen required ($2 \times 793.82 = 1588$ milliliter) i.e., approximately 1.6 ml of sunscreen will be needed for males, and for females, $2 \times 530.6 = 1062$ milliliter, that is approximately 1 ml will be needed.

The steps that are involved in the calculation are outlined for easy understanding.

Circumference (C) = 100 cms $= 2\pi r$. Radius(r) = Circumference/2 π $100/2 \times 22/7 = 100 \times 7/2 \times 22 = 15.9$ cms

Area $= \pi r^2 = 22/7 \times 15.9 \times 15.9 = 3.14 \times 252.81 = 793.82 = 794$ sq cm. The calculation can be further simplified as follows. Area $= C^2/4\pi$.

The numerator in the formula for area is: $C^2 = 100 \times 100 = 10000$. The denominator in the formula is: $4 \times \pi = 12.566$, therefore area = 10000/12.566 = 795.8 sq cm. Stated as a thumb rule, area is equal to square of circumference divided by 12.566 or 12.6.

Sunscreens are expensive, and have to be applied repeatedly. Less amount of sunscreen than the

Figure 1: Face outlined with string

Figure 2: Forearm outlined with string

recommended quantity makes the sunscreen less effective. Excessive quantity makes the sunscreen more expensive, and also more uncomfortable. We calculated that the mean cost of 1 ml of sunscreen of 10 brands is approximately Rs. 3 to 4. It is more expensive if the patient uses the sunscreen repeatedly, or in excessive quantity. We recommend 1 ml of sunscreen for the female, and 1.5 ml for the male during each application. It is possible to calculate the sunscreen to be applied over any given area e.g., arm, back, etc. Figure 2 shows how a string is placed over the forearm. The same length of thread can be arranged in form of a circle. Once the area is determined, the amount of sunscreen can be easily calculated. This method actually measures the perimeter of the skin, and assumes it to be a circle. In general, an oval surface would encompass a lesser area than a circular surface of the same perimeter. This method would thus result in a larger calculated area than the actual, and in the case of the forearms, we would use more sunscreen than is necessary. However, this may not make a significant difference.

We do not feel justified to recommend specific amount of sunscreen for the exposed area of arms, and upper and lower back, as there would be a considerable individual variation in the area exposed to sunlight. The string method can also be helpful in keeping track of increase or decrease in various irregular shaped skin lesions including ulcers.

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Fixed drug eruption and generalised erythema following etoricoxib

Sir,

Non steroidal anti-inflammatory drugs (NSAIDs) are among the most widely used medications – both by prescription and over the counter. The newer NSAIDs, inhibitors of the cyclo-oxygenase enzyme-2 (COX-2 inhibitors), are fast becoming the drugs of first choice in the treatment of acute pain, chronic pain and most rheumatic conditions. These compounds blunt prostaglandin production through inhibition of cyclooxygenase-2 (COX-2) while sparing cyclooxygenase-1 (COX-1), and have been shown to cause significantly fewer serious gastrointestinal adverse events such as ulceration and bleeding, than the nonselective NSAIDs.[1] Etoricoxib, one of the newer COX-2 inhibitors, has enhanced biochemical COX-2 selectivity over that of the other drugs in this category: rofecoxib and celecoxib.[2] Though, adverse cutaneous effects to celecoxib and rofecoxib have been reported, there has been no report of cutaneous side effects to etoricoxib so far. We report a case of fixed drug eruption and generalized erythema occurring simultaneously following etoricoxib.

A 38-year-old female, doctor by profession, developed a 1.5 cm size, well circumscribed, round, erythematous