Q1: How is the dosage calculated for 5-Methoxypsoralen (5-MOP)?

A: It is still standard to use double the dose of 5-MOP compared to 8-MOP: for microcrystalline psoralen tablets (the types we get in Scotland and in the other UK countries) it is either usual to use:

- 0.6 mg/Kg body weight for 8-MOP or 1.2 mg/Kg for 5-MOP
- Or 25mg per estimated m^2 body surface area for 8-MOP [1] or 50mg per m^2 body surface area for 5-MOP.

There are major between-individual differences in oral bioavailabilty of psoralens (how well they are absorbed and how they are metabolised) but likely less variability in the oral bioavailability of 8-MOP vs. 5-MOP within an individual. ***Using the same method of dose estimation for both 8-MOP and 5-MOP is important*** (especially if not doing a repeat minimal phototoxic dose test, as a bioassay to check that enough psoralen is still reaching the skin to cause a phototoxic response). If dosing based on weight use that for both 8-MOP and for 5-MOP and if dosing based on body surface area then again use that for both psoralens.

Example: In someone of weight 70Kg and height 173 cm (5'8") then dosing purely on weight means:

- *42 mg, rounded to **40 mg**, 8-MOP (0.6 x 70)*
- *and 84 mg, rounded to **80 mg**, 5-MOP (1.2 x 70).*

It is usual now to base psoralen dose on body surface area (with many prescribing an increased dose if concomitant drugs such as phenytoin are expected to lower skin psoralen concentration after a given oral dose) [2]. In this example the body surface area is estimated as 1.83 (using Du Bois formula surface area = 0.007185 x weight in $Kg^{0.425}$ x height in $cm^{0.725}$) then:

- *1.83 x 25 makes 45.75, rounded to **50mg**, 8-MOP*
- *and 1.83 x 50 makes 91.5, rounded to **100mg,** 5-MOP.*

In both cases the 5-MOP dosage is double the 8-MOP dose. The important thing is to use the same dosing method for both psoralens, not to use body surface area for one and weight alone for the other.

References:

1. Sakuntabhai, A., B.L. Diffey, and P.M. Farr, *Calculation of 8-methoxypsoralen dose according to body surface area in PUVA treatment.* Br J Dermatol, 1995. **133**(6): p. 919-23.

2. Ling, T.C., T.H. Clayton, J. Crawley, L.S. Exton, V. Goulden, S. Ibbotson, K. McKenna, M.F. Mohd Mustapa, L.E. Rhodes, R. Sarkany, and R.S. Dawe, *British Association of Dermatologists and British Photodermatology Group guidelines for the safe and effective use of psoralen-ultraviolet A therapy 2015.* Br J Dermatol, 2016. **174**(1): p. 24-55.