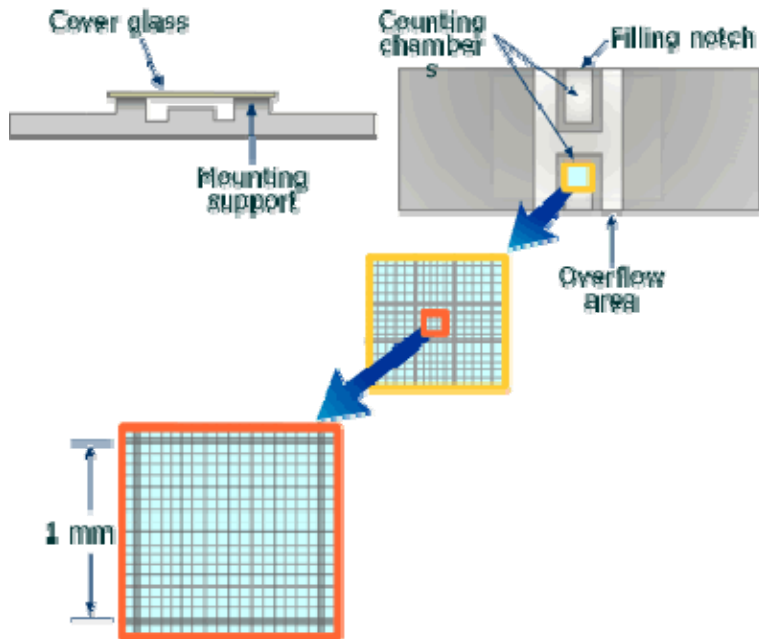
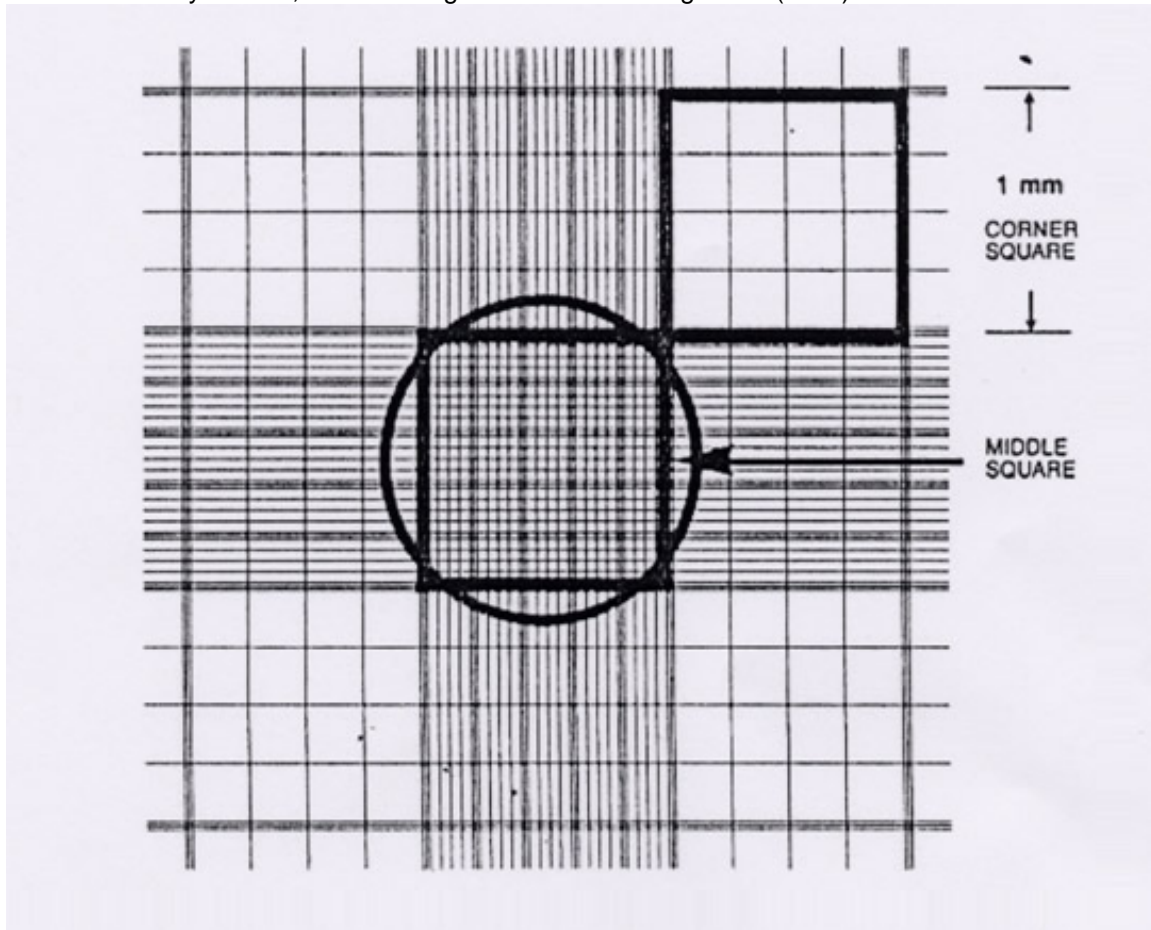


Calculation for Sperm Concentration using the haemocytometer. Reference WHO5 pages 32+



On the haemocytometer, there are 9 grids each containing 100nl (0.1ul).



In the central grid there are 25 squares (each with a volume of 4nl-25x 4=100nl).

If you count 1 sperm in 1 square, the concentration is

- 1 sperm/4nl
- 0.25 sperm/nl
- 2.5 sperm/10nl
- 25 sperm/100nl
- 250 sperm/1000nl (ul)
- 250sperm/ul
- 250,000 sperm/ml.

By extension

If you count 4 sperm/1 square, the concentration is

- 4 x 250,000 sperm/ml
- 1 million/sperm/ml

If you dilute the sample 1/10 and count 4 sperm /1 square, the concentration is

- 10x4 x 250,000 sperm/ml
- 10 million/sperm/ml

If you dilute the sample 1/10 and count 20 sperm /5 square, the concentration is

- 10x4 x 250,000 sperm/ml
- 10 million/sperm/ml

Therefore the equation for estimating the concentration by haemocytometer is

$A = (\text{the number of sperm counted} / \text{number of squares})$ [average number/square]

$B = A / 4 \text{nl}$ [number sperm per unit volume of 1 nl]

Concentration = $B \times \text{the dilution}$

OR (wait for it)

Concentration = $(\text{number of sperm counted} \times \text{Dilution}) / (\text{number of squares} \times 4)$ in million/ml

Examples...

1. sample diluted 1/10 had a count of 50 sperm in 5 squares
 - a. Concentration = $(50 \times 10) / (5 \times 4) = 500 / 20 = 25$ million/ml
2. sample diluted 1/10 had a count of 20 sperm in 5 squares
 - a. Concentration = $(20 \times 10) / (5 \times 4) = 200 / 20 = 10$ million/ml
3. undiluted sample had a count of 50 sperm in 5 squares
 - a. Concentration = $(50 \times 1) / (5 \times 4) = 50 / 20 = 2.5$ million/ml
4. undiluted sample had a count of 20 sperm in 5 squares
 - a. Concentration = $(20 \times 1) / (5 \times 4) = 20 / 20 = 1.0$ million/ml
5. sample diluted 1/20 had a count of 500 sperm in 5 squares
 - a. Concentration = $(500 \times 20) / (5 \times 4) = 10,000 / 20 = 500$ million/ml