WHO specifications on nets

- WHO specifications on nets were developed in 2000
- Reviewed in 2005 to develop generic specs for netting materials irrespective of fibres
- The purpose was to ensure that nets:
  - Protect against vector/insect entry
  - Retain dimensional stability after washing
  - Are strong and durable - over time of use and storage
  - Including the seams are strong
  - Are safe for users
- Specifications are utilized by:
  - NMCP and other buyers to make informed decisions on procurement
  - WHOPES to develop minimum recommendations on nets and LLINs
What are the minimum specifications required?
Mesh Count

- To prevent vector entry - size of holes (not number of holes/unit surface) is important
- However, there is lack of a standardized method to measure size of holes
- In the absence of such a method, there is consensus that 156 holes/sq inch (mesh count) remains the quality specification for nets
- Because of LLINs different ability to retain insecticides, they may have a different minimum mesh count - which may be product specific
Bursting strength

This is generally measured as:

- **Bursting strength** - maximum pressure applied before the net bursts

- **Tensile strength** - strain applied in various directions before the net gives way

- **Tear strength**
  - weight is hung from a small hole before the net tears
  - by grasping material in both hands and gauging the effort required to push the thumb through it

- Bursting is the only practicable test for which data exists
  - Measured on an area of netting material measuring 7.3 sq cm - giving 250 kPascal
Bursting strength of seams

- Bursting strength of seams
- No documented experience on seams
- Expected that seams must be at least as strong as the netting material
Dimensional stability

- Test performed with a sample of a netting material and expressed as a % of shrinkage in the process of washing.

- WHO specifications rely on the 8A European wash procedure - gentle wash at 30 degrees Celsius and drying procedure C (dry flat).

- Acceptable dimensional stability criteria for netting may not be appropriate for nets - if there is a large difference between warp and weff shrinkage/stretching because wrinkling of the seams could occur.
Durability and storage stability

- Appropriate tests to measure wear and tear are needed
- In the absence of such tests, measuring storage stability becomes important
- There is a well established test (CIPAC method MT 46.3)
  - Capable of simulating storage equivalent to approx 2 yrs storage at room temperature
  - Used for WHO specifications for LLINs
  - Includes a requirement for maintenance of bursting strength after accelerated storage
A number of questions

- These specifications are used by WHOPES to provide interim recommendations for LLINs
- But the specifications are laboratory-based
- How would such LLINs perform under field conditions?
- How do we measure their performance?
- What attempts have been made to measure their performance?
- How can such measurements be improved?
A longer-lasting net is required to sustain Universal Coverage (UC)