# Ten years to VISION 2020: Progress in blindness prevention in Sudan (2003-2010)


## Summary

### OBJECTIVE:

1. To review the progress made in blindness prevention in Sudan since the adoption of Vision 2020 in 2003.
2. To show the program's gaps and shortfalls.

### METHODS:

Reports from national Vision 2020 programs covering the period 2003 to 2010 were reviewed. In addition, data generated from six RAAB surveys conducted in 2009-2010 was analyzed.

### RESULTS:

Results show that the prevalence of blindness has decreased from 1.5% in 2003 to one percent in 2010. Conversely, cataract surgical output, cataract surgical rates (CSR), and IOL implantation rates increased steadily. Furthermore, it is estimated that 70% of the population is covered with refractive errors services. Low vision services are provided by 4 centers. Trachoma mapping has been completed for Northern Sudan except Darfur. SAFE strategy is implemented. Prevalence of Childhood Blindness is not known. Two centers provide specialized pediatric eye services. There is community directed treatment with Ivermectin (CDTI) in 3 out the 4 onchocerciasis foci.
Ophthalmologists tripled in number. Optometists exceeded 1000, compared to less than 500 in 2003. Secondary and tertiary level facilities increased in major cities. There is no primary eye-care program.

### CONCLUSION:

In conclusion, Northern Sudan is exhibiting excellent progress in many of the crucial components of Vision 2020, namely cataract, trachoma, onchocerciasis, refractive errors and low vision targets. However, boasting the current eye care program

and increasing attention to diabetic retinopathy and glaucoma are essential steps to ensuring that all the targets outlined in Vision 2020 are successfully reached in time.

**Introduction:**
In 2003, Sudan launched its Vision 2020: The Right to Sight program by instituting an inaugural national committee to combat blindness. Within the same year, the committee adopted a five-year plan to aid the prevention of blindness. An estimated 1.5% of the population exhibited blindness in 2003. The primary causes were cataract, glaucoma, trachoma, and onchocerciasis. These causes were responsible for 60%, 20%, 15% and 5% of blindness, respectively.

**Methods:**
National reports of the Vision 2020 program covering the period 2003 to 2010 were reviewed, as well as, data generated from rapid assessment of avoidable blindness (RAAB) surveys conducted between 2009 and 2010 in six various states (Kassala, Northern state, North Kordofan, Sinnar, White Nile and Gezira). To illustrate the progress made and identify the shortfalls, the results of these reports and surveys were compared to the idealized targets set forth by the WHO for Vision 2020.

**Results:**

1. **Prevalence and causes of blindness:** Extrapolating from six RAAB surveys in Northern Sudan, the prevalence of blindness in 2010 is estimated to be 1%. The causes are shown in figure 1.

2. **Disease control** (table 1)**:**

***a. Cataract:*** Cataract surgical output and the cataract surgical rate (CSR) increased steadily (figure 2). In 2010, the IOL implantation rate was 98% compared to 20% in 2003. Cataract surgical coverage (CSC) ranged between 64% and 85%.

***b. Refractive Errors and low vision:*** It is estimated that 70% of the population is covered with refractive errors services. In 2010, the cumulative number of functioning graduates from the College of Optometry (established in 1958)

exceeded 1000 students, compared to less than 500 in 2003. Screening of more than 2 million school children (aged 6-15) was conducted between 2003 and 2008. Low vision services were provided by 4 centers, all of them in Khartoum. More than 50 optometrists completed training in low vision.

*c.* ***Trachoma:*** From 2006 to 2009, in collaboration with The Carter Center, 190000 individuals were examined in 88 districts surveyed for trachoma. The survey covered all Northern Sudan except Darfur due to security concerns. In 76 districts, TF prevalence was below 5%. Nine districts had prevalence between 5 and 9%. Only three districts showed prevalence of 10% or more. The incidence of trichiasis in adults is below 1/1000 in 50% of the districts. SAFE strategy is effectively implemented. Impact surveys are promising and show success. Target date for elimination of blinding trachoma from Northern Sudan is 2015.

*d.* ***Childhood Blindness (CHB):*** Prevalence of CHB is not known in Sudan. Two centers, located in Khartoum, provide specialized pediatric eye services. The number of cataract surgeries performed in 2009 for children below 15 years of age, exceeds 3600. Midwives received training on basic eye care for neonates in 2005. There is no screening program for retinopathy of prematurity.

*e.* ***Onchocerciasis:*** In Northern Sudan, onchocerciasis is known to be endemic in four areas. There is community directed treatment with ivermectin (CDTI) in Abu Hamad, Galabat and the south Darfur (Radom) foci. The major change in the program was the shift in focus from control to elimination in Abu- Hamad. Mass drug administration of ivermectin was adopted twice-per-year. The last three years witnessed high rates of geographical and therapeutic coverage as shown in figure 3.

**3. Human resource development:**

Table (2) shows human resource development. Ophthalmologists increased from 90 in 2003 to 260 in 2010. An additional 120 are expected to graduate locally in the coming four years. Northern Sudan has a satisfying number of

qualified optometrists. However, mid-level ophthalmic personnel are decreasing in number due to the suspension of intake to ophthalmic medical assistants' school. The majority of eye-care providers are in urban areas.

4. **Infrastructure and technology:**
   Table (3) shows development in infrastructure since 2003 compared to vision 2020 targets. Despite good progress, eye-care facilities exist only in major cities.

**Conclusion:**

Northern Sudan is demonstrating decent progress in most of the components of Vision 2020, namely cataract, trachoma, onchocerciasis, refractive errors and low vision. However, scaling up, attention to diabetic retinopathy and glaucoma are still needed. There is also a need to complete data related to eye-care. Reducing trichiasis back-log is mandatory to achieve elimination of trachoma by 2015. Gaps in mid-level human resources are to be filled. Developing a primary eye-care program is a priority. Extension to underserved areas is another priority.

Table 1: Disease control (comparison between V2020 targets and situation in Northern Sudan).

| **Diseases** | **Indicators** | **V2020 target** | **Northern Sudan in 2010** |
|---|---|---|---|
| **Cataract** | CSR | 2000 | 2025 |
| | CSC | at least 85% | 75% |
| | Outcome | ≥85% see 6/18 or better | 36% see 6/18 or better |
| **Trachoma** | Prevalence of TF | <5% in all districts | In 76 out of 88 districts |
| | Prevalence of TT | 1per1000 in all districts | In 50% of districts |
| **RE and LV** | functional optometrists | 1 per 50000 | 1 per 40000 |
| | LV centers | One per10 million | One per 7.5 million |
| **CHB** | Paediatric eye centers | One per10 million | One per 15 million |
| | Prevalence of CHB | 0.4/1000 | No data |
| **RB** | CDTI coverage | 100% of endemic communities | 100% |
| | Therapeutic coverage | above 80% | Above 85% |

CSR: cataract surgical rate. CSC: cataract surgical coverage. TF: follicular trachoma. TT: trachoma trichiasis.

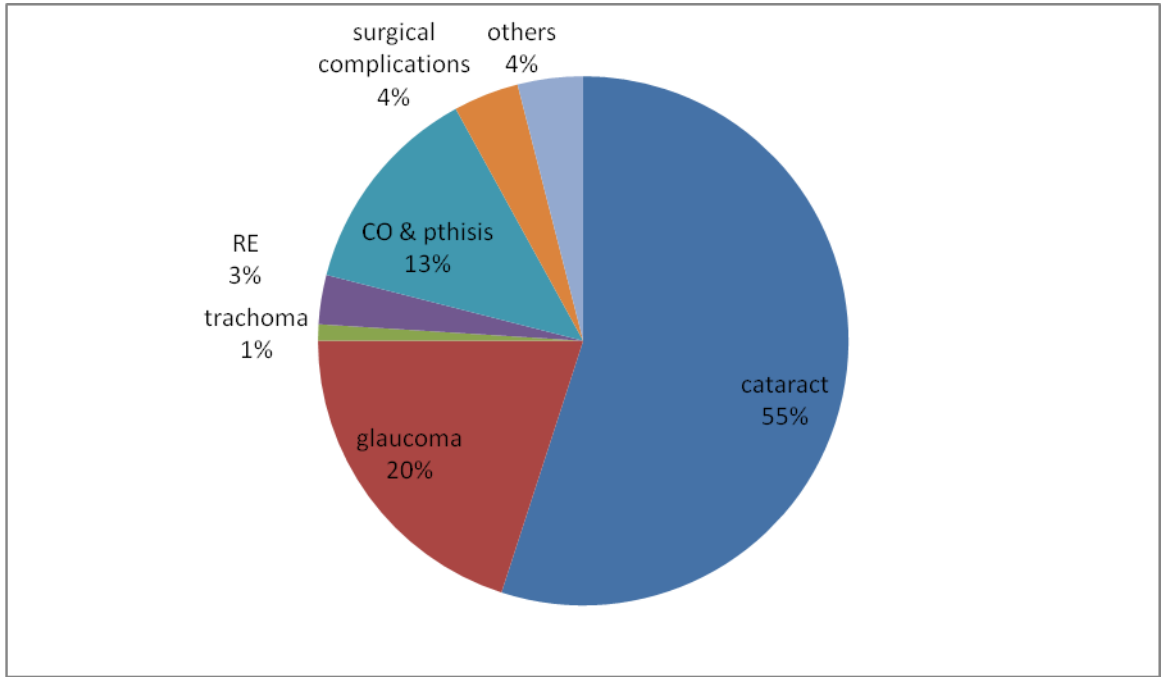
Table 2: Human resource development (2003-2010) compared to vision 2020 targets

| HR | V2020 targets by 2020 | Situation in Northern Sudan | |
|---|---|---|---|
| | | 2003 | 2010 |
| Ophthalmologists | 1:250 000 | 1:300 000 | 1:140 000 |
| OTs, OMAs, ONs | 1:100 000 | 1:140 000 | 1:400 000 |
| Optometrists | 1:50 000 | 1:60 000 | 1:30 000 |

Table 3: Infrastructure development (2003-2010) compared to vision 2020 targets

| Facility | V2020 targets by 2020 | Situation in Northern Sudan | |
|---|---|---|---|
| | | 2003 | 2010 |
| Ophthalmologists | 1:10 million | 1:25 million | 1:7.5 million |
| OTs, OMAs, ONs | 1:1 000 000 | 1:3 million | 1:1.7 million |
| Optometrists | 1:100 000 | 1:25 million | 1:40 million |

Figure 1: Causes of blindness in Northern Sudan




CO: corneal opacity. RE: refractive errors

Figure 2: Progress in cataract surgical rate (CSR) from 2002-2009

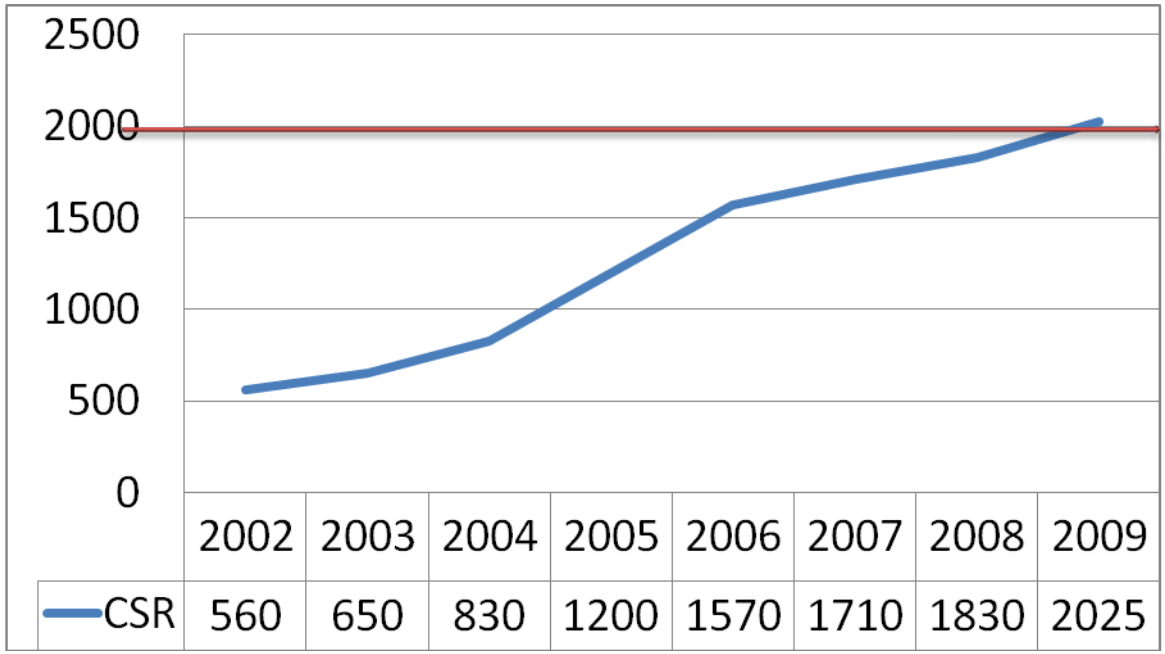
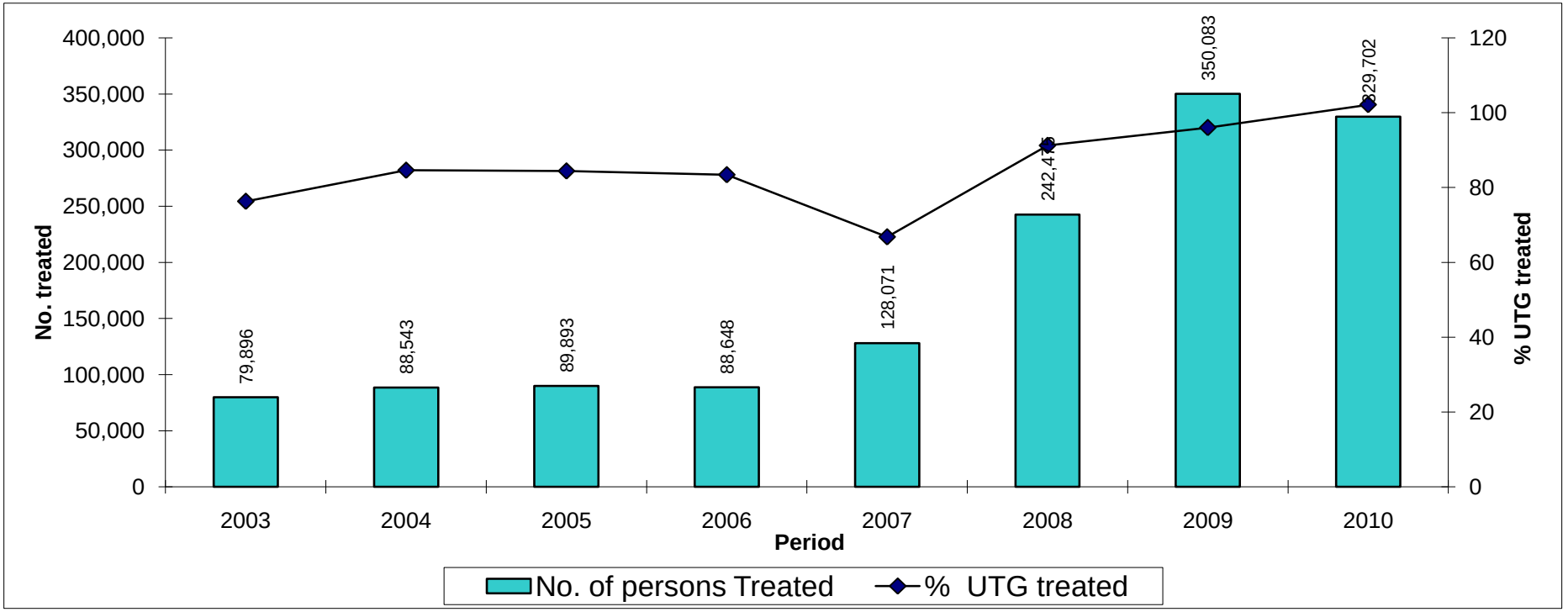


Figure 3: Mass treatment for onchocerciasis in Northern Sudan (2003-2010)




UTG: ultimate treatment goal