Costing & Sustainability of DR Programs

Thulasiraj Ravilla
Aravind Eye Care System
Since “DR services” is predominantly non-surgical, the costs specific to it would be similar in tertiary & secondary levels

Could be costlier in tertiary centres on account of fancier equipment and more expensive HR

DR is not a stand-alone service and most Equipment/HR will not be specific to DR – so marginal costing approach is more realistic
Costing approach

- DR service is a mixed bag
  - for most part routine eye exam
  - Some investigations
  - Few requiring laser and even fewer surgery
- Predominantly fixed cost (though intravitreal injections are now increasing as treatment in case of Diabetic Macular Edema)
- So costing of the service for a period (year) is more meaningful than for each unit of service
Cost Elements

- Equipment
- Training
- Space

- Human Resources
- Case finding
- Service Delivery
- Equipment maint.

Cost of capital & Depreciation

Cost of providing care

Annual cost of providing DR Services
Basis for Costing

EQUIPMENT

- Indirect Ophthalmoscope
- 20 D & 78 D Lenses
- Fundus Camera with fluorescein capability
- Laser will all delivery systems

STAFFING

- Ophthalmologist (100%)
- Nurse/Oph. Asst. (100%)
- Counsellor (100%)
- Community worker (50%)
- Technician (10%)
Annual Cost Estimate
(Based on Aravind Costs)

- Equipment ($ 50K)
- Training ($ 1K)
- Space ($ 0)

- HR & O/H ($ 32 K)
- Equip. Maint. (2 K)
- Case finding ($ 7 K)
- Supplies ($ 1 K)

Cost of capital @ 12% ($ 6K) & Depreciation @ 20% ($ 12 K)

Annual Operations Cost ($ 42 K)

Annual cost
$ 60 K
($ 240 a day)
# Financial Viability

Earning about $250 a day through DR Services

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Fee (Rs.)*</th>
<th>Fee ($)</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient Exam</td>
<td>50</td>
<td>1</td>
<td>50</td>
</tr>
<tr>
<td>Fundus Photo/Investigations</td>
<td>400 – 600</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Laser sessions (per eye)</td>
<td>1000</td>
<td>16</td>
<td>6 (3 persons)</td>
</tr>
<tr>
<td>Estimated Revenue</td>
<td></td>
<td></td>
<td><strong>$242</strong></td>
</tr>
</tbody>
</table>

* Fee charged at Aravind

**Challenge:**
How to get 50 diabetics to walk into the clinic day after day with about 25% of them being new patients to the clinic
Sustainability Strategies

Experiences from Aravind Eye Care System
Sustainability of DR Programs & Scaling

- It has got to work financially – for the patient & provider
- The team specific to DR services have to be fully engaged
- The equipment have to be optimally utilized

Key to make all of this happen is patient volumes
Sustaining DR Services

- Strategies
  - Cost Effectiveness
  - Demand Generation
  - Services
  - Technology
  - HR Pipeline
Demand
The steps for effective outcome of a DR Program

Seek Care

Diagnosis & Advice

Acceptance of Advice

Treatment

Self Care

Follow up

Acceptance of treatment is low in hospital settings and even poorer in community screening.

Barriers to getting treated amongst those who agree to treatment

DR patients’ adherence to annual review visits drops to less than 30% by the fourth year

Fewer than 15% of diabetics are aware that they must have their eyes tested regularly

Not all ophthalmologists carry out comprehensive eye exam. Issue of competence? Diabetics are rarely referred by physicians

Glycemic control

Fewer than 15% of diabetics are aware that they must have their eyes tested regularly

Not all ophthalmologists carry out comprehensive eye exam. Issue of competence? Diabetics are rarely referred by physicians

Glycemic control
Awareness Creation in the Community

Are You Diabetic?

Check your eyes early

Diabetes affects the eye

Healthy Retina
Macula Edema
Bleeding

For further information contact an ophthalmologist

Lions - Aravind Diabetic Retinopathy Project

Public Exhibition

Posters

Handbills and Stickers

Instructions to Diabetic Patients

1. Diabetes affects eyes, brain, heart and kidneys.
2. Diabetics are twice as likely to develop eye problems than non-diabetics.
3. The most common eye complication is diabetic retinopathy, involving the blood vessels of the retina.
4. Dilated eye examination by eye doctors can detect these vital changes in the retina early. It is an indicator of similar changes occurring in brain, kidneys and heart.
5. The onset of diabetic retinopathy is related to duration of diabetes.
6. Seventy to eighty percent of diabetics will develop diabetic retinopathy in 20 years.
7. The risk of blindness is 25 times higher in diabetics.
8. Diabetic retinopathy is often asymptomatic until deterioration of vision occurs.
10. Laser treatment will help to retain the vision of the most and will not help to regain lost vision.
11. Laser treatment facilities are available in many cities like Delhi, Mumbai, Bangalore, Pune and 15 others.
12. All diabetics should have periodic eye examinations by an eye doctor. To prevent loss of vision due to diabetic retinopathy.

For further details contact: Aravind Eye Hospital

WORLD DIABETES DAY NOVEMBER 14, 2002

Diabetes affects the eye
Consult Your ophthalmologist

Aravind Eye Care System - laico
Press Meeting
Awareness creation in Targeted group

- Seminar for Medical shop & lab personnel
- Seminar for Sedentary workers
Awareness creation in Individuals

- Patient counselling

- Patients & Doctor interaction

Aravind Eye Care System
World diabetes day (14th November)

- Global Diabetic Walk
- Diabetic detection & Diabetic Retinopathy camp
- Seminar for general public
- Seminar for School children
- Exhibition
- Live Media coverage
Human Resource Pipeline
## Training to deal with D R

<table>
<thead>
<tr>
<th>Name of the training</th>
<th>Duration</th>
<th>Offered from</th>
<th>Total Trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Fellowship in Retina Vitreous</td>
<td>2 years</td>
<td>1992</td>
<td>(175+28) 203</td>
</tr>
</tbody>
</table>

### Short Term Courses

#### In Collaboration with SSI, Lions

<table>
<thead>
<tr>
<th>Name</th>
<th>Duration</th>
<th>Offered from</th>
<th>Total Trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect Oph.</td>
<td>1 month</td>
<td>1994</td>
<td>163</td>
</tr>
<tr>
<td>Indirect Oph. &amp; Lasers</td>
<td>2 months</td>
<td>1998</td>
<td>93</td>
</tr>
<tr>
<td>Lasers in D R</td>
<td>2 months</td>
<td>2000</td>
<td>586</td>
</tr>
</tbody>
</table>

**Total Short term trainees** 842
Technology
Making it Affordable
Low Cost fundus imaging in Vision Centres
Affordable Technology

AUROLAB

FORUS HEALTH
Leveraging IT Technology
Services
DR Community Screening
## Exclusive DR screening camps

<table>
<thead>
<tr>
<th></th>
<th>Aravind, Madurai</th>
<th>Aravind, Theni</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of camps conducted</td>
<td>29</td>
<td>28</td>
</tr>
<tr>
<td>Patients screened</td>
<td>4,899</td>
<td>2,634</td>
</tr>
<tr>
<td>Diabetics identified</td>
<td>2,693 (55%)</td>
<td>1,661 (63%)</td>
</tr>
<tr>
<td>DR identified</td>
<td>347 (13%)</td>
<td>192 (12%)</td>
</tr>
</tbody>
</table>
Diabetic retinopathy camps to be organised at government hospitals

From August 19 to November 24 in association with the Aravind Eye Hospital

Staff Reporter

MADURAI: To attend to eye-related problems of rural poor caused by diabetes, exclusive diabetic retinopathy camps will be organised at government hospitals in the district from August 19 to November 24.

According to Tamil Nadu Health Systems Project District Coordinator, P. Palanikumar, the camp has to be conducted as the number of diabetic retinopathy cases in the district is on the rise due to lack of awareness among people. The screening camp would help to identify the ailment, he said.

As patients from villages did not have the wherewithal to get exposed to sophisticated diagnostic facilities used to detect the medical problem, which they had been enduring for a long time, they resigned to their fate and let the disease take the better of them.

The camp would be organised in association with the Aravind Eye Hospital as a public-private initiative. The Aravind Hospital had promised to bring in modern diagnostic facilities to detect and provide treatment for cases with diabetic retinopathy, said Dr. Palanikumar.

The camps would be conducted at Government Hospital, Usilampatti, on August 19; at Tirumangalam GH on August 27; at T. Vadiapatti GH on September 8; at Sholavandan GH on September 17; at Melur GH on October 22; at Peraiyur GH on November 12 and at Mannadimangalam GH on November 24.

The first camp would be held at the district headquarters hospital, Usilampatti, on August 19 between 9 a.m. and 1 p.m., since the day was marked for diabetes and hypertension outpatients, he said.
## DR Screening at Theni District (working with Primary Health Centres)

<table>
<thead>
<tr>
<th>Period: (20.8.2012 to 31.5.2013)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Primary Health Centres</td>
</tr>
<tr>
<td>No. of Diabetics examined</td>
</tr>
<tr>
<td>No. of Existing DR patients</td>
</tr>
<tr>
<td>No. of new DR patients identified</td>
</tr>
</tbody>
</table>
Diabetic Retinopathy: Challenge: Case detection & Follow-up

The Strategy

- Shift case detection & routine follow-up to Physicians
- Patient Registry for effective Treatment & Follow-up
Proof of concept – that shift is possible (fixed facility)
Patient Flow protocol – Standardize (outreach & hospital)

- Registration
- Blood Test
  - Yes: Diabetic
  - No: Exit
- Height & Weight.
  - Yes: Physician Exam.
  - No: Exit
- Registration for eye exam
  - V/A Testing
    - Preliminary exam
      - IOP
        - D & I/O exam
          - Dilatation
            - EXIT
  - Yes: Counselling
    - EXIT
Hospital level - Metrics can be developed to monitor:-
- Number of New diabetics identified
- % of diabetics undergone annual fundus examination
- % of diabetics compliance to treatment and follow-up
- % of diabetics compliance to referral from outreach/remote screening
- Developing “Diabetic Eye Registry”

Program level – Understand program impact
- Referrals from community
- District level coverage
## Aravind data: 2012

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Aravind Madurai</th>
<th>Aravind Theni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying OPD (New cases):</td>
<td>205,948</td>
<td>41,741</td>
</tr>
<tr>
<td>Diabetic identified</td>
<td>16,278 (8%)</td>
<td>4,659 (6%)</td>
</tr>
<tr>
<td>DR diagnosed</td>
<td>1,575 (9.7%)</td>
<td>650 (14%)</td>
</tr>
<tr>
<td>Laser/Injection and Surgery:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laser treatment (PRP/Focal/Grid)</td>
<td>7,664</td>
<td>311</td>
</tr>
<tr>
<td>Injection (Avastin, Tricort, OZURDEX, Lucentis)</td>
<td>2,057</td>
<td>-</td>
</tr>
<tr>
<td>Surgery (Vitrectomy – Diabetic cases)</td>
<td>475</td>
<td>-</td>
</tr>
</tbody>
</table>
Conclusion – Sustaining DR Program
Needs comprehensive approach

Awareness Creation

Equipment & Technology

Facility

Staff & Skills

Quality

Operating Systems

Ownership to the issue

Attitude & Perspective

Supply

Demand

Retention & Compliance

Barriers

Access

Cost

Remote Diagnosis

Partnerships for referrals
How to – manual
(developed with support from Sight Savers & Lions)

Guidelines for the Comprehensive Management of Diabetic Retinopathy in India

A VISION 2020 The Right to Sight INDIA Publication

Developed by ARAVIND EYE CARE SYSTEM
“Intelligence & Capabilities are not enough. There must be the joy of doing something beautiful..”

- Dr. G. Venkataswamy