The benefit of adopting Total Quality Management was felt in every sphere in the Hospital. The quality initiatives led to improvements which are listed in 3 groups:

i. Improvement in Systems
ii. Improvement in Human Resource
iii. Improvement in Fiscal discipline

I. IMPROVEMENT IN SYSTEMS-EXPERTISE AND DELIVERY RELATED RESULTS

The need of every patient visiting the Hospital is ‘quick, effective health care provided in an atmosphere of comfort’. Translated into hospital service, this would mean shorter waiting time in OPD and for investigations and quality time spent with the doctor. Initially the customer need of a short waiting time but increased interaction time with the doctor appeared paradoxical. Both these needs were addressed differently. System improvement in OPD through removal of patient registration and regularisation of appointment system led to an appreciable reduction in waiting time. The MAT classes, discussed earlier, helped doctors to improve their communication skill and thus satisfy the patient’s need for increased contact time. The trend of patient satisfaction on contact time and reduction in OPD time over the past four years are shown in Figure 1 and 2.

The doctors and all the staff in the clinical and investigative department were introduced to the concept of internal customers. The clinical departments were identified as customers of investigative departments. These interactive departments signed MOUs (Memorandum of Understanding). Adherence to the commitments on MOUs helped to reduce the waiting time for Radiology investigation and the cycle time for Pathology reports. The reporting time for routine blood tests (cycle time) reduced from 24 hours to 5.5 hours (Figure 3), and that of urgent blood reports from 380 min to 90 min. The availability of X-Ray reports also improved (Figure 4).

Hospital death rate is defined as death after 48 hours of admission. It reflects the treatment expertise of a hospital and is therefore one of the key measures monitored. The hospital death rate formed part of the TMH scorecard (ref. S. Mitra, ‘Tools of TQM’) and became an important performance parameter for the clinical departments. The departments of O&G and Pediatrics monitored perinatal mortality and neonatal mortality rates in their respective departments. To reduce the trend in these, cross functional improvement projects were taken up by these two departments. The resulting decrease in mortality (Figure 6 and 7), together with similar efforts in other departments, contributed to a reduction in the overall hospital death rate. (Figure 5)

Nosocomial infection and multi-drug resistant bacilli are difficult challenges in the best of hospitals. An infection control committee was formed to conduct surveillance on hospital acquired infection, analyse data and recommend corrective measures. Several QIPs were also taken up to address the problem in specific areas. Their recommendations were adopted by different clinical departments as part of ‘sharing of best practices’. All this helped to reduce infection rates in the hospital (fig.8&9).

Thus, through improvement in the systems and delivery processes, a visible impact has been made on vital parameters—mortality and morbidity rates and cycle time of treatment for both OPD and indoor patients.

II. HUMAN RESOURCE RESULTS

An institution needs to build up its human resource pool to gain the competitive edge. At the same time, to become cost competitive, it must reduce man-power. This translates into less number but more efficient employees.

Cost competitiveness was a strategic goal of TMH. One way of achieving this was
through reduction in number of existing employees without compromising the quality of service. The reduction of Men on Roll (MOR) was achieved through innovative approaches. Multi-skilling in an employee was achieved by training him in allied work areas. The hospital benefited by allocating him increased responsibility and reducing existing man power. The employee gained through opening up of newer promotional avenues. Such an approach worked well in the hospital, with ward attendants being trained as data entry operators. Merger of work place (creation of trauma ward) increased the efficiency of work output. All this helped TMH to reduce its work force from 1681 in 1995 to 1200 in 2000 (fig. 11). However, the optimum doctor-patient and nurse-patient ratio was maintained, most of the reduction being in number of ministerial staff.

Empowered and motivated employees contributed to improvement by actively participating in the Suggestions Scheme. Another measurement of empowerment was the increasing number of registered Quality Circles that met regularly to solve work related problems. Absenteeism amongst hospital staff was brought down through counseling, employee awareness classes, de-addiction measures, etc. (fig 12).

Training, both technical and non-technical, remained a thrust area. The process of training included correct training need identification, design and delivery of in-house training programmes and measuring the effectiveness of training. TMH is considered a benchmark in Tata Steel for employee training, the figures for man-hours training going up from 2.83 hours in 1995 to 7.5 in 2000-01 and number of persons trained and retrained increasing from 494 to 1598 (fig 13).

Apart from attending various specialty conferences, doctors were also nominated for training addressing a specific need. Here too, the approach was planned, an example being the training on laproscopic surgery before introducing the technique in the hospital. A measure of the effectiveness of this training was the increasing number of laproscopic surgeries done and, as a consequence, the reduced length of hospital stay.

Effectiveness of training also reflected in the increasing number of awards, both local and national, in various scientific forum - 7 awards were bagged by TMH in the AISMOC (All India Steel Medical Officers Conference) in February, 2001.

In line with the Excellence Model's core concept of valuing employees, a satisfaction survey was done annually to focus on human resource problems. One such survey indicated a deficiency in career progression of junior doctors due to lack of post-graduate training facilities. In 1998, TMH got accredited to the National Board of DNB training in various subjects. A culture of learning was thus created in this industrial hospital.

III. IMPROVEMENT IN FISCAL DISCIPLINE

The strategic goal of cost competitiveness was achieved through the contribution of every hospital employee. The budgetary deficit was brought down from 26.0 crores in 1997 to 22.89 crores in 2000. Reduction in wasteful expenditure without compromising on quality was practiced by all. However, the significant contributors to the reduction in budgetary deficit were-

1. Less men on roll (fig 14)
2. Drop in power consumption (fig 15)
3. Reduction in wastage through VE initiatives (fig 18)

Apart from the expenditure on treatment of employees and their dependants at TMH, a sizeable part of the hospital budget was spent on referring patients to specialised centres for procedures like coronary bypass surgery, laser treatment etc. Judicious screening and selection of patients to ensure that only patients who would benefit from a procedure were referred, brought down the number of referrals (fig 16) and its cost (fig 17).

The success of the Quality movement in TMH lies not in numbers and figures but in the attitudinal change it has brought about in the employees. Quality has become a way of life and problems have actually stimulated creativity. TBEM has helped in bringing continuous improvement and ISO system has provided the necessary surveillance but results so far have been encouraging enough to make TQM an ongoing process. A lot remains to be done.
**Fig. 1**

**WAITING TIME - OPDs**: Average & % pts. seen within 30 mins.

<table>
<thead>
<tr>
<th>Year</th>
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<tbody>
<tr>
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<td>92</td>
</tr>
<tr>
<td>2K-01</td>
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</table>

**Fig. 2** Satisfaction on contact time

**CONTACT TIME - DOCTORS**

Satisfaction Level in %

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<tr>
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</table>
Fig. 3 Cycle time for Pathology Reports

**PATHOLOGY**
Cycle Time - Routine Blood Repor

<table>
<thead>
<tr>
<th>Year</th>
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<td>18</td>
</tr>
<tr>
<td>97-98</td>
<td>6</td>
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<tr>
<td>2K-01</td>
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Fig. 4

**RADIOLOGY CYCLE TIME**
% reports available same day

<table>
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<th>Year</th>
<th>%</th>
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<tr>
<td>98-99</td>
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<tr>
<td>H1 2K-01</td>
<td>96</td>
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</table>
Fig. 5 Hospital Death Rate

![Hospital Death Rate Graph]

Fig. 6 Perinatal Mortality Rate in TMH

![Perinatal Mortality Graph]
Fig. 7 Neonatal Mortality Rate in TMH

**NEONATAL MORTALITY RATE**

% Deaths

- 10
- 8
- 7.5
- 6.7
- 6.5
- 5.8

95-96  96-97  97-98  98-99  99-2K  H1  2K-01

Fig. 8 Nosocomial UTI in TMH ICU

**ICU**

NOSOCOMIAL URINARY TRACT INFECTION RATE

Benchmark 12.5 %

%  
52.1  37.4  62.3  11.8  5

96-97  97-98  98-99  99-2K  H1  2K-01

88
Fig. 9  LSCS Infection Rate in TMH

OBST. & GYN.
% infection in elective L.S.C.S

%  
5 4 3 2 1 0
96-97 97-98 98-99 99-2K 2K-01

2.1 4.2 3.8 4.3

Fig. 11  Reduction in Work Force

RIGHTSIZING
Target: 1240

Note: There is no fig. 10
Fig. 12  ABSENTEEISM RATE IN TMH

ABSENTEEISM

No. of Absentee Days:
- 8.5
- 7.6
- 6.9
- 5.96
- 5.54

Years:
- 98
- 98-99
- 99-00
- 2K-01

Fig. 13  In-house training at TMH

TRAINING PROGRAMME

No. of persons Trained In-house

Years:
- 97-98
- 98-99
- 99-00
- 2K-01

Numbers Trained:
- 494
- 1549
- 1598
- 1426
Fig. 14 Decreasing Trend in Budget Deficit

FINANCIAL RESULTS

Rs. in Crores

28.7 31.2 34 36.2 34.33 34.09
23.3 24.5 26 25.8 23.17 22.89
5.3 6.2 7.9 10.3 11.16 10.24

95-96 96-97 97-98 98-99 99-00 2K-01

- Expenditure ■ Income ▲ Deficit

Fig. 15 Power Consumption in the Hospital

POWER CONSUMED

Unit in kwh

92.4 81.2 46.86

98-99 99-2K 2K-01
Fig. 16  Outside Referrals

Fig. 17  Cost of Outside Referrals
Fig. 18: Savings from VE Projects

VALUE ENGINEERING
Savings & No. of Projects

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Projects</th>
<th>Total Savings (Rs. in Lakhs)</th>
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<tbody>
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