Martini-Klinik – Super specialization of prostate cancer care or the proof, that Michael Porter’s VBHC-Model works...

Dr. Detlef Loppow

May 31st 2017
<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>939 Mio €</td>
</tr>
<tr>
<td>Patients</td>
<td>386,379</td>
</tr>
<tr>
<td>in patient</td>
<td>93,357</td>
</tr>
<tr>
<td>out patient</td>
<td>293,022</td>
</tr>
<tr>
<td>Beds</td>
<td>1,678</td>
</tr>
<tr>
<td>Employees</td>
<td>10,053</td>
</tr>
<tr>
<td>doctors and researchers</td>
<td>2,471</td>
</tr>
<tr>
<td>nursing/therapeutic staff</td>
<td>3,162</td>
</tr>
<tr>
<td>Students</td>
<td>3,628</td>
</tr>
</tbody>
</table>
New Hospital Building

85,000 m²
DTS
Pneumatic Tube System

3,500 Rooms

750 Beds
Close Loop of Medication System (Unit Dose)

130 ICU Beds
16 ORs
Strategy: Focus

UKE „old“:
We do everything

UKE new:
We know, who is best!
What we do, we do better than others!
- Weak market position locally
- Number of patients below minimal requirements
- Medical outcomes below average

Termination of elective Hip/knee replacement program
Portfolio Analysis – 2004

Center of Surgery

1. Merger „Orthopedics“ and „Trauma“ department
2. Process redesign „General Surgery“
3. Growth strategy „Urology“

Profitability
Revenues by Cost based on DRG 2003

x = CaseMix (= CMI³ Fallzahl)
Integrated Practice Unit for Prostate Cancer

- Founded in 2004 as a specialized clinic for prostate cancer diagnosis and treatment
- Local therapy:
  - open/robotic surgery
  - RTx
  - HDR and LDR-BrachyTx
  - AS
  - focal therapy
- Chemo-/immunotherapy for advanced / metastatic disease
▪ > 5,000 outpatient visits
▪ > 1,500 prostate biopsies / imaging procedures
(MRI-fusion/conv./ elastography/HistoScan)
- > 2,200 radical prostatectomies
- > 400 primary radiation therapies
- > 200 active surveillance
- ~ 30 focal therapies
Clinical Studies
(> 700 Patients included)
59 (87) Articles
323 (560) Impact Points
> 18 Mio. Euro Industrial and Research Funding since 2008
<table>
<thead>
<tr>
<th>Country</th>
<th>Outcome Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>Variation in 30-day mortality rate from heart attack</td>
</tr>
<tr>
<td>UK</td>
<td>Variation in bypass surgery mortality</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Variation in complication rates from radical prostatectomies</td>
</tr>
<tr>
<td>Germany</td>
<td>Variation in reoperation rates after hip surgery</td>
</tr>
<tr>
<td>Sweden</td>
<td>Variation in mortality after colon cancer surgery</td>
</tr>
</tbody>
</table>

Source: *International Consortium for Health Outcome Measurement*
Would you judge an airline solely on whether you survived the flight?

Outcome Quality of Air Travel

- I have survived.
- The plane had no technical problems.

- I arrived in time.
- The plane was clean.
- Luggage arrived completely and without any damages

- Stuff was friendly
- Nutrition was good
- Entertainment varied
Clinical and Outcome Data of more than 23,000 Patients

PROM = Patient Reported Outcome Measurement

Outcome Study Group:
2 Data Entry Manager
2 PhD Students
1 Database-Manager
1 Statistician
Shipping of about 1,500 Questionnaires per Month (QLQC30, IIEF; IPSS, EPIC 26)
Value Based Health Care

Value = outcomes that matter to patients / cost per patient
Healing
Continence
Potency
Follow-up Data since 1992

Increasing Operations - Increasing Follow-Up Data

Quality Control
Benchmarking
Science

The Cancer Genome Atlas
Understanding genomics to improve cancer care

RP per Year

% Patients Sending Follow-Up Information

Follow-Up Data

n Patients

0 2000 4000 6000 8000 10000 12000 14000 16000 18000


97.1 98.2 98.0 98.4 98.0 98.5 98.0 97.9 97.6 97.5 96.6 95.5 95.2 94.8 94.9 94.2 94.5 93.5 92.5 90.7 85.9

n Patients
Basic Science: ICGC, TCGA
Basic science: ICGC, TCGA

Hamburg TMA plus Database
Samples of 18,000 RP Patients and their Outcome Data

Study cohort on TMA Biochemical relapse among categories
(n=11,152) (n=1,824)

Follow-up (mo)
Mean 53.4 - Median 36.8

- Precartation PSA
  - <4: 1,407 (142)
  - 4-10: 6,735 (827)
  - 10-20: 2,159 (521)
  - >20: 720 (309)

- pT category (AJCC)
  - pT2: 7,370 (570)
  - pT3a: 2,409 (587)
  - pT3b: 1,262 (618)
  - pT4: 63 (49)

- Gluegon grade
  - ≤3+: 2,859 (193)
  - 3+: 1,565 (573)
  - 4+: 6,183 (849)

- pN category
  - pN0: 6,117 (1,126)
  - pN+: 561 (291)

- Surgical margin
  - negative: 8,984 (1,146)
  - positive: 1,970 (642)

No. of patients (%)
a) b) c) d) e)
Letzter Prae-OP Wert: 3,47 ng/ml
Rezidivdatum: 14.02.2007

Postoperative Evolution
Data analysis
Data analysis
- Revision < 0.2 %
- Colon/ureter injury < 0.2 %
- death 0 %
- blood transfusion < 5 %
- MRSA < 0.1 %
Benchmarking - Every 6 Months!

**pT2 Tumore**

<table>
<thead>
<tr>
<th>Surgeon</th>
<th>Nerve sparing rate</th>
<th>positive margin rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4,3</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>7,9</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>3,5</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>7,6</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>4,5</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>8,8</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>7,9</td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>9,1</td>
<td></td>
</tr>
</tbody>
</table>

- nerve sparing rate
- positive margin rate
Deviation in Quality

Number of pads 1 week post OP

surgeon
Transfer of Innovations

- non-FLLU, Mean pads/day = 1.49
- FLLU, Mean pads/day = 0.87

*p<0.0001*

Surgeon A
Surgeon B
Surgeon C
## Pad consumption 12 months after prostatectomy

<table>
<thead>
<tr>
<th>Pads /24 h</th>
<th>Patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>96.9</td>
</tr>
<tr>
<td>1-2</td>
<td>2.2</td>
</tr>
<tr>
<td>3-5</td>
<td>0.6</td>
</tr>
<tr>
<td>&gt;5</td>
<td>0.3</td>
</tr>
</tbody>
</table>

### Average in Germany

56.7 %

Barmer GEK Report 2012

Schlomm, Eur Urol 2011
Radicality:
- Cure
- Avoid additional treatments

Quality of life
- Continency
- Potency
Neurovascular Structure Adjacent Frozen-Section Examination

Negative margins = nerve sparing
Positive margins = no nerve sparing

Diagram showing T1-3 stages of prostate cancer
© CancerHelp UK
Impact on nerve preservation

<table>
<thead>
<tr>
<th>Staging</th>
<th>Nerve Preservation</th>
<th>Positive Surgical Margins</th>
</tr>
</thead>
<tbody>
<tr>
<td>pT2</td>
<td>99 / 92</td>
<td>7 / 12</td>
</tr>
<tr>
<td>pT3a</td>
<td>94 / 72</td>
<td>21 / 32</td>
</tr>
<tr>
<td>pT3b</td>
<td>88 / 40</td>
<td>47 / 51</td>
</tr>
</tbody>
</table>

NeuroSAFE 97%  
Control 81%  
Nerve preservation all stages

Schlomm, Eur Urol 2012

Nerve preservation in:
- 25,561 cases in Germany 2012: 32.8%
- 18,355 AOK-Patients 2008-2011 treated in 245 hospitals with > 30 cases per year: 37.8%
- Barmer GEK Report 2012: 47.4%
### Tabelle 3-23: Weitere Therapie nach dem Index-Aufenthalt bis zum Befragungszeitpunkt nach Angaben der Patienten

*Quelle: Patientenbefragung*

<table>
<thead>
<tr>
<th>Behandlung</th>
<th>Sofort</th>
<th>Später&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Martini-Klinik 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art der Therapie&lt;sup&gt;a&lt;/sup&gt;</td>
<td>n=483</td>
<td>n=117</td>
<td>n = 2147</td>
</tr>
<tr>
<td>Keine</td>
<td>56,7%</td>
<td>58,1%</td>
<td>88.2 %</td>
</tr>
<tr>
<td>Hormontherapie</td>
<td>11,0%</td>
<td>12,8%</td>
<td>4.2 %</td>
</tr>
<tr>
<td>Bestrahlung</td>
<td>19,1%</td>
<td>15,4%</td>
<td>7.6 %</td>
</tr>
</tbody>
</table>

*Quelle *3: BARMER GEK Krankenhaus Bericht 2012  
*Quelle *4: Martini-Klinik Datenbank*
Open and Robotic Prostatectomies

Foundation of Martini-Klinik 2004
70% of PCa-Centers perform < 100 RRPs per year!
Top 10 academic PCa centers 2015

1. Martini-Klinik
2. Mayo Clinic
3. Johns Hopkins
4. MSKCC
5. Cleveland Clinic
6. Univ. Bochum
7. LMU München
8. Univ. Mailand
9. Univ. Dresden
10. Charité Berlin
Patients Being Caught in the Machinery?
Would you recommend the hospital to friends or family?

- **Martini-Klinik Station 3**: 100.00%
- **Martini-Klinik Station 1**: 99.14%
- **Martini-Klinik Station 4**: 99.08%
Unique Features

- The only European institution exclusively dedicated to prostate cancer diagnosis and treatment
- Faculty structure
- 10 Faculty members perform or train all open and robotic prostatectomies
- Martini-Klinik faculty position = life time dedication
- Super specialization

Clinical experience accumulates in the Martini-Klinik
equally ranked, equally paid
Contracts of employment contain quality criteria (nerve sparing rates, continence rates, positive margin rates, ...). Fulfilment induces a payment into a pool, which is later divided equally and paid to all faculty members.
Individual Learning Curve

„High-Volume“ Surgeons

5-year probability of freedom from BCR (%) vs. Surgeon experience (number of prior surgeries)

Vickers, JNCI 2007
Prof. M. Graefen (Study Outcome Group, Robotic Surgery)
Prof. H. Heinzer (Resident Education, Events)
Prof. H. Huland (International Outcome Standardization)
Prof. A. Haese (Robotic Surgery, Serum/Urine Marker)
Prof. T. Steuber (Advanced PCa)
Prof. T. Schlommm (Basic Science)
PD Dr. G. Salomon (Focal Therapy, Imaging)
Dr. U. Michl (QoL, Functional Data)
Dr. I. Thederan (Organisation, Complementary Medicine, Nutrition)
PD Dr. L. Budäus (Imaging)
Prof. Dr. D. Tilki (Basic Science)
Every patient needs to know the outcome quality that can be expected prior to the begin of a treatment!
„Soon the time will come when our students and colleagues will not be satisfied with general comments about this or that success, instead they will call each doctor a charlatan who is not able to express his achievements in figures.”

Theodor Billroth, 1860