Transdisciplinary Care in Geriatric Surgery

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Complexities of Current Surgical Care
Changing Profiles of Patients

Comorbidity

ADL dependent

Frail
Physiological Issues in Elderly Surgical Patients

Old Paris Hilton

Old Leonardo DiCaprio
Abundance of Information
Changing Profiles of Society
Complexities of Healthcare Infrastructure
How to Build a House

Patient is home owner
Surgeon is architect
What is Involved?

- Sitework
- Foundation
- Carpenters, concrete
- Weathering
- Bricklayers
- Electricians
- Plumbers
- Drywall finishers
- Cabinet makers
- Ventilation and air-conditioning
- Insulators
- Trim, finish carpenters
- Painters
- Floor installers
Players
Multidisciplinary Approach

Adhoc, uncoordinated care rendered to patients not managed by Geriatric Surgery Service.
Pitfalls of Multidisciplinary Approach

For a civil engineer, there’s no such thing as a “little mistake.”
Pitfall 1

Failure of the Owner and the Team to Share a Common Vision of the Final Outcome

- An elderly patient may be willing to undergo major surgery because he/she may want to preserve his autonomy and independence from the complications of the pathology, he/she may not be very particular about long term survival.
- A surgeon on the other hand may be obsessed with performing the most radical cancer operation so as to ensure the best long term survival, in doing so certain risks may be taken.
Pitfall 2
Failure of Coordination of the Various Works to be Performed in a Timely Fashion

• The importance of maintaining physical activity during the perioperative period is vital to the preservation of functional capacity of an elderly surgical patient. Thus the concept of post-operative rehabilitation.

• However is this optimal? After an operation, an elderly patient has to grapple with the discomfort of monitoring devices and tubes, not to mention the pain that comes hand in hand with surgery. Starting to learn exercises to maintain functional capacity at this time may be met with resistance and lack of compliance.
Pitfall 3

Failure of Members of the Team to Communicate Effectively

- A geriatric physician may have seen a patient and noted that there may be early signs of cognitive impairment, however this subtle finding was not clearly communicated to the surgeon and anaesthetist.
- As such the latter 2 doctors involved in the care then failed to recognize the increase risk of post-operative cognitive dysfunction and delirium. The nurse in charge then did not institute any measures to reduce the risk of delirium and this resulted in the patient sustaining a fall in the early post-operative period.
Pitfall 4

Failure of Members of the Team to Understand What the Other is Doing

• A surgeon is convinced of the benefits of incentive spirometry during the perioperative period and insists that this is the standard of care for all the patients. The physiotherapists however have other ideas. Some patients are just not suitable for incentive spirometry, they are unable to learn the proper use of the incentive spirometer and thus do not derive the benefits of the device. The physiotherapists also have other innovative methods of encouraging adequate lung expansion in the perioperative period. In this situation, if the surgeon had understood the processes of pulmonary rehabilitation that the physiotherapists undertake, he/she may have become more acceptable of other methods.
Pitfall 5

Failure of the Members of the Team to Follow Though from Start to Finish

• An anaesthetist may have seen an elderly patient prior to surgery and had formulated a strategy for this patient. In this strategy, epidural analgesic was planned. However, on the day of the operation, another anaesthetist performs the anaesthesia and decides that parenteral opioids would suffice. After the operation, yet another anaesthetist reviews the pain and decides on yet another strategy for pain relief. All had their reasons and justifications during these episodic periods of care, however, it was likely that none managed to deliver the pain control that is optimal from the patient point of view. The patient would have liked to learn about just 1 method of pain control that he/she can identify with that went from start to finish.
Our Strategies?

• Transdisciplinary approach
• Multi-level risk stratification
• Best condition for surgery
• Attention to detail
Trans-disciplinary Geriatric Surgery Team

- Surgeons
- Anaesthetists
- Geriatric Medicine Physicians
- Cardiologist
- Nurse Clinician
- Physiotherapist
- Dietitian
- Medical Social Worker
- Pharmacist
- Befriender
Trans-disciplinary Approach

NURSE

MSW  BEFRIENDER  DIETICIAN  PHYSIOTHERAPIST

PATIENT

CARDIOLOGIST  GERIATRICIAN  PHARMACIST  ANAESTHETIST

SURGEON
Dispenses of hierarchy
Heightened communication
Patient-centric
Role extension (improve one’s own discipline)
Role enrichment (understand other disciplines)
Role expansion (interdisciplinary education)
Role release (blurred boundaries)
Role support (constant feedback and quality improvement)

Coordinated and less fragmented care
Key Components of Khoo Teck Puat Hospital Trans-disciplinary Geriatric Surgery Service

• Patient involvement
• Early Goal-setting Identifiable to team
• Integrative Decision-making and Care Planning
• Enhanced coordination
• Heightened communication
• Role enhancements
• Start to finish
Trans-disciplinary Multi-level Risk Assessment
# GSS Step-wise Consenting Process

<table>
<thead>
<tr>
<th>Step</th>
<th>Process Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Consolidation of data of risk stratification and disease pathology</td>
</tr>
<tr>
<td>2</td>
<td>Patient education process on disease pathology</td>
</tr>
<tr>
<td>3</td>
<td>Transdisciplinary patient and family conference</td>
</tr>
<tr>
<td>4</td>
<td>Exploration of treatment goals in accordance to patient</td>
</tr>
<tr>
<td>5</td>
<td>Exploration of treatment options and setting treatment aims, risks and benefits</td>
</tr>
<tr>
<td>6</td>
<td>Obtain consensus on treatment strategy between patient, surgical team and family</td>
</tr>
<tr>
<td>7</td>
<td>Clear documentation of discussions</td>
</tr>
</tbody>
</table>
# Patient Education Materials

**GUIDELINE FOR PATIENTS UNDERGOING COLORECTAL SURGERY.**

<table>
<thead>
<tr>
<th>Operation day</th>
<th>POD 1</th>
<th>POD 2</th>
<th>POD 3 - 4</th>
<th>POD 5 - 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Fluids will be given through your vein for hydration.</td>
<td>Oral painkillers will be ordered.</td>
<td>Pain assessment will be done by our doctors and medications will be adjusted accordingly.</td>
<td>Apart from your usual medications (if any), oral painkillers will be prescribed for you to take when necessary.</td>
<td></td>
</tr>
<tr>
<td>- Medications will be given to you for: - pain relief - preventing nausea/vomiting after operation - for preventing infection if needed.</td>
<td>Fluids will continue to be given through your vein until you can drink orally.</td>
<td>Fluids given through the vein will be adjusted according to: - Output from tubings - Blood Pressure, Heart rate - Urine output - Blood results - Oral intake</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Treatment / Management</strong></td>
<td>Oxygen will be given to through tubing place at your nostrils (nose).</td>
<td>Oxygen will be weaned off gradually.</td>
<td>Tubes may be removed on doctor's orders if amount is very little.</td>
<td>You will be assessed for fitness for discharge.</td>
</tr>
<tr>
<td>Presence of multiple tubes: - Small flexible tube inserted into your vein for fluids and medication to be given. - Abdominal drain - Urine tube - Tube inserted into anus.</td>
<td>Urine tube may be removed.</td>
<td>Please report to nursing staff whenever you need to void after removal of urine tube.</td>
<td>Wound dressings will be removed and left exposed if dry. Wound care advice will be reinforced.</td>
<td></td>
</tr>
<tr>
<td>Blood tests may be ordered after operation Wound dressings will only be changed upon doctor's order.</td>
<td></td>
<td>Your doctor will inform you of plan of care and day of discharge.</td>
<td>Stitches/ clips may be removed on 10th day after operation at polyclinic.</td>
<td></td>
</tr>
<tr>
<td>Socks to prevent clotting of blood in the legs will be obtained.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Monitoring</strong></td>
<td>You may be transferred to special care area for close observation after operation.</td>
<td>You will be reviewed by surgeons twice a day or as indicated for: - Lung assessment - Temperature Blood pressure, heart rate, breathing rate and pain level. - Amount of fluids from tubings (if any) - Wound dressing - Readiness for progression of food intake. - Passage of flatus/ gas and stools/ motion after operation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Early Setting of Goals

• Goals for Team
  – Care plan
  – Attention to details

• Goals for Patients
  – Return of function
  – Independence and QOL vs Survival
Integrative Decision-making and Care Planning
Enhanced Coordination
Components of Prehabilitation

- Education
- Optimisation of lung function
- Mobilisation
- Muscle strengthening
- Nutrition
Postoperative
Post-operative
Post Operation
Early Mobilisation Flowchart

Why is your patient still in bed?

Is/does your patient...

At least 6 hours post-op or no op done

No

Yes

Stable vital signs:
HR (<120), BP (Mean >60-110) for past 12 hours

Not sure

RR < 25 and FiO2 ≤ 0.6 Up to VM

No

Yes

Alert and calm Spontaneously pays attention

Not sure

Does not have any surgical contraindications as per Dr’s input

No

Yes

Not sure

Able to bend the knee and push foot against your hand

No

Yes

Pain score <6/10

Your patient can safely mobilise out of bed.

PT will review for mobilisation

Su et al., 2016
Heightened Communication

Doc Ong H Y
NHC echo is not sent to CPRS / EMRX – I saw the copy from NHC – IIRC was April 2012

Doc. Tan K. Y
Son says another 2013
The cardio is Bernard Kwok

Doc Ong H Y
he will have to show us the report – Bernard is private in mt E only VC in NHC for heart failure patients

Yujing - Work
ok...will call the son and follow up..thank u!

Doc Edward
Madam Kwok C W
It appears that she has frequent falls specially when looking up
Right carotid feels like tortuous and there is a bruit left carotid
Will it be helpful to do Doppler?
Edward
Role Enhancement

Team-based learning in UK
Combined Learning
Combined Activities
Start to Finish

Dedicated Team manages from start to finish
Prehabilitation

Barthels Index after 2 weeks of prehabilitation: 71/100 from 65/100

Satisfied patient and family reported overall improvement in functional status.
Geriatric Surgery Outpatient
Post Discharge Rehabilitation

Geriatric Surgery Service continue to provide home based rehabilitation after discharge to ensure preservation of functional state and quality of life as per premorbid.

Ability to perform self care with minimal/no assistance.
Medication reconciliation at home after surgery
Social Integration
Constant Review of Processes
A Collaborative Transdisciplinary “Geriatric Surgery Service” Ensures Consistent Successful Outcomes in Elderly Colorectal Surgery Patients

Kok-Yang Tan · Phyllis Tan · Lawrence Tan
CUSUM Methdology

- Cumulative Summation of consecutive cases in chronological order

- $C_n = X_n - K + C_{n-1}$ where $X$ is success or failure and $K$ is the adjustment for risk

- Definition of failure:
  - Perioperative mortality.
  - Unplanned prolonged hospital stay for any reason including morbidity.
  - Failure to achieve a functional score (Barthels score) of within 10% of the preoperative function at 6 weeks.

- Risk adjustment using POSSUM
Collaborative Trans-disciplinary Approach

Patient no.
Standard Treatment

![Graph showing Standard Treatment with Patient no. on the x-axis and a numerical value on the y-axis. The graph indicates a trend over patient numbers.]
Nursing Quality

Transdisciplinary care begins here

Patient sequence

Consistent good performance in consecutive patients with NC.
Inconsistent nursing care standard in group without nurse clinician
Transdisciplinary Collaborative Approach to Management of Surgical Complications Leads to More Successful Outcomes in Elderly Surgical Patients

Liu Huimin, Kok Yang Tan

Department of General Surgery, Khoo Teck Puat Hospital
<table>
<thead>
<tr>
<th>Patient demographics</th>
<th>Multidisciplinary</th>
<th>Transdisciplinary</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age</td>
<td>80.61</td>
<td>83.06</td>
<td>0.094</td>
</tr>
<tr>
<td>Male gender</td>
<td>27 (61.4)</td>
<td>5 (31.2)</td>
<td>0.039</td>
</tr>
<tr>
<td>ASA &gt;2</td>
<td>25 (56.8)</td>
<td>11 (68.8)</td>
<td>0.404</td>
</tr>
<tr>
<td>WCIS &gt;3</td>
<td>13 (29.5)</td>
<td>4 (25.0)</td>
<td>0.730</td>
</tr>
<tr>
<td>Operative Details</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectal</td>
<td>14 (31.8)</td>
<td>7 (43.8)</td>
<td>0.392</td>
</tr>
<tr>
<td>Emergency</td>
<td>7 (15.9)</td>
<td>5 (31.2)</td>
<td>0.189</td>
</tr>
<tr>
<td>Cancer</td>
<td>37 (84.1)</td>
<td>15 (93.8)</td>
<td>0.330</td>
</tr>
<tr>
<td>Mean predicted POSSUM morbidity score</td>
<td>46.82</td>
<td>50.4</td>
<td>0.611</td>
</tr>
<tr>
<td>Mean predicted POSSUM mortality score</td>
<td>13.24</td>
<td>16.9</td>
<td>0.470</td>
</tr>
<tr>
<td>Operative Outcomes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean stay after complications</td>
<td>15.67</td>
<td>10.93</td>
<td>0.116</td>
</tr>
</tbody>
</table>

Table 1 Comparing patient demographics of the multidisciplinary and the transdisciplinary group
## Multivariate analysis of factors correlating to 30 days mortality

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Odds Ratio</th>
<th>95% Confidence Interval</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA&gt;2</td>
<td>1.045</td>
<td>0.170-6.441</td>
<td>0.962</td>
</tr>
<tr>
<td>WCIS &gt;3</td>
<td>1.823</td>
<td>0.342-9.703</td>
<td>0.482</td>
</tr>
<tr>
<td>Rectal Surgery</td>
<td>0.227</td>
<td>0.025-2.041</td>
<td>0.186</td>
</tr>
<tr>
<td>Emergency Surgery</td>
<td>0.469</td>
<td>0.047-4.704</td>
<td>0.520</td>
</tr>
<tr>
<td>Multidisciplinary</td>
<td>1.108</td>
<td>0.182-6.735</td>
<td>0.912</td>
</tr>
</tbody>
</table>

## Multivariate analysis of factors correlating to prolonged hospital stay

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Odds Ratio</th>
<th>95% Confidence Interval</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA&gt;2</td>
<td>2.414</td>
<td>0.583-9.992</td>
<td>0.224</td>
</tr>
<tr>
<td>WCIS &gt;3</td>
<td>1.996</td>
<td>0.500-7.978</td>
<td>0.328</td>
</tr>
<tr>
<td>Rectal Surgery</td>
<td>3.052</td>
<td>0.815-11.426</td>
<td>0.098</td>
</tr>
<tr>
<td>Emergency Surgery</td>
<td>1.17</td>
<td>0.247-5.533</td>
<td>0.843</td>
</tr>
<tr>
<td><strong>Multidisciplinary</strong></td>
<td><strong>5.326</strong></td>
<td><strong>0.986-28.774</strong></td>
<td><strong>0.052</strong></td>
</tr>
</tbody>
</table>

## Multivariate analysis of factors correlating to multi system involvement

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Odds Ratio</th>
<th>95% Confidence Interval</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA&gt;2</td>
<td>1.254</td>
<td>0.354-4.442</td>
<td>0.726</td>
</tr>
<tr>
<td>WCIS &gt;3</td>
<td>3.426</td>
<td>0.804-14.601</td>
<td>0.096</td>
</tr>
<tr>
<td>Rectal Surgery</td>
<td>2.047</td>
<td>0.597-7.017</td>
<td>0.254</td>
</tr>
<tr>
<td>Emergency Surgery</td>
<td>0.729</td>
<td>0.168-3.168</td>
<td>0.673</td>
</tr>
<tr>
<td><strong>Multidisciplinary</strong></td>
<td><strong>3.589</strong></td>
<td><strong>0.994-12.957</strong></td>
<td><strong>0.051</strong></td>
</tr>
</tbody>
</table>
Barriers

- Administrative departments
- Historical workflows
- Redundant processes
- Isolated projects
- Uneven culture
Conclusions

Transdisciplinary model of care provides an integrated assessment and care plan with shared goals.

It aims for an ultimate unified and coordinated management.
OUR MISSION
DEPARTMENT OF SURGERY

To deliver progressive and collaborative surgical care with a passion for safety and a culture of compassion.