Staging Tool

Simplifies the Collection of Valid UICC-TNM Staging Data for the Princess Margaret Cancer Registry

NAACCR 2014
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Head, Princess Margaret Cancer Registry
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Outline

• Background of Princess Margaret Cancer Registry
• History of Staging at the Princess Margaret Cancer Registry
• Development of an Electronic Tool
• Demo of the Tool
Princess Margaret Cancer Centre

- Opened in 1958 in Toronto
- Cancer centre providing all modalities of treatment for cancer patients
- Currently the only hospital based cancer registry in Ontario
- Part of the University Health Network along with 2 acute care facilities, 1 rehabilitation facility
- Over 15,000 new cases per year
- Staging has been an integral part of our Registry since the 1970’s beginning with a few sites:
  - breast, ovary, head & neck
  - gradually extended to all stageable cancer sites
Evolution of Staging at PM

PAST

PRESENT

Online System

FUTURE

Data Integration

Paper form
Paper-based Staging

1964

[Image of a paper form from 1964]

2002

[Image of a paper form from 2002]
Paper-based Staging

Manual form used was based on previous versions of UICC. TNM staging was recorded by physician

A better, more efficient way was needed to accurately capture cancer staging information on all patients…
Online Cancer Staging System

- With expansion of the Electronic Patient Record, an in-house system was developed in 2002 to electronically capture stage.
- With the permission of UICC an application developed in-house using the UICC TNM 5\textsuperscript{th} edition.
- Designed to calculate the stage group based on the individual UICC-T, N and M values entered.
Online Cancer Staging System

Presently all new patients have:

- Medical Record Number (MRN)
- Demographics
- Appointment date
- Responsible oncologist
downloaded into the staging tool
Online Cancer Staging System Data

Also Capture:

- Date of diagnosis
- Reason for referral, disease site group, primary site, morphology and UICC TNM clinical and pathologic elements and stage group
- Laterality appears when appropriate
- Responsible oncologist and staged by
Online Cancer Staging System Data

Site specific data elements for primary sites that require special factors to calculate stage:

- Thyroid; an age calculator designed to take into account the different staging schemas for patients
  - based on whether they are under 45 years of age, or older
- Grade required for bone and soft tissue sarcoma
Online Cancer Staging System Data

Additional site specific factors to calculate stage:

- Serum markers for testis cases
- Mitotic rate for Gastrointestinal Stromal Tumours
- Low, high and unknown risk categories for Gestational Trophoblastic Tumours
- Prostate prognostic stage grouping is calculated with Gleason and PSA
Colon Disease Site
Patient Information

Medical Record Number: 123456789
Patient's Name: Sample Patient
Birth Date: 01/01/30  Gender: F

Source: Administrator
Record Creation Date: 04/28/14
Last Appt. Date: 04/28/14

Case: 88-Malignant-April 28, 2014

Disease is: Malignant
Reason for referral: New Diagnosis of Primary
Site Group: Digestive System
Malignant Disease: Select

OVERALL Clinical Stage: 88
Date of Diagnosis: Jan / 1 / 2014

OVERALL Path Stage: 88

Responsible Oncologist: Select

Calculate Stages

In Progress  No Show  Cancel  Save  Signoff...
Patient Information

Medical Record Number: 123456789
Patient's Name: Sample Patient
Birth Date: 01/01/30 Gender: F

Source: Administrator
Record Creation Date: 04/28/14
Last Appt. Date: 04/28/14

Case: Malignant-April 28, 2014

Disease is:

T0 No evidence of primary tumour
T1 Tumour invades submucosa
T2 Tumour invades muscularis propria
T3 Tumour invades through muscularis propria into subserosa, or into non-peritonealized pericolic or perirectal tissues
T4 Tumour directly invades other organs or structures, and/or perforates visceral peritoneum. Direct invasion in T4 includes invasion of other segments of the colorectum by way of the serosa, e.g., invasion of the sigmoid colon by a carcinoma of the caecum. Tumour that is adherent to other organs or structures, macroscopically, is classified T4. However, if no tumour is present in the adhesion, microscopically, the classification should be pT3.
T4a Tumour perforates visceral peritoneum
T4b Tumour directly invades other organs or structures
TX Primary tumour cannot be assessed

Clinical T: Select
N: Select
M: Select

Pathological T: Select
N: Select
M: Select

OVERALL Clinical Stage: Calculate Stages
OVERALL Path Stage:
Case: Malignant - April 28, 2014

Disease is: Malignant
Reason for referral: New Diagnosis of Primary
Site Group: Digestive System
Malignant Disease: Colon
Morphology ICD-O-3: 84803 - Mucinous adenocarcinoma

Clinical T: T3
N: N1a
M: M0

OVERALL Clinical Stage: Calculate Stages

Responsible Oncologist: Select

OVERALL Path Stage:
Cancer Staging

Patient Information

Medical Record Number: **123456789**
Patient's Name: **Sample Patient**
Birth Date: **01/01/30**  Gender: **F**

Source: Administrator
Record Creation Date: **04/28/14**
Last Appt. Date: **04/28/14**

Case: Malignant - April 28, 2014

Disease is: **Malignant**
Reason for referral: **New Diagnosis of Primary**
Date of Diagnosis: **Jan 1 2014**
Site Group: **Digestive System**
Malignant Disease: **Colon**
Morphology ICD-O-3:

**84803 - Mucinous adenocarcinoma**

Clinical T: **T3**
N: **N1a**
M: **M0**

Pathological T: **T2**
N: **N0**
M: **M0**

Post Neo-Adjuvant

OVERALL Clinical Stage: 

Calculate Stages

OVERALL Path Stage:

Responsible Oncologist: **Select**
Patient Information

Medical Record Number: 123456789
Patient's Name: Sample Patient
Birth Date: 01/01/30  Gender: F

Source: Administrator
Record Creation Date: 04/28/14
Last Appt. Date: 04/28/14

Case: IIIB-Malignant-April 28, 2014

Disease is: Malignant
Reason for referral: New Diagnosis of Primary
Site Group: Digestive System
Malignant Disease: Colon
Morbidity ICD-O-3:
84803 - Mucinous adenocarcinoma

Clinical T: T3
N: N1a
M: M0

OVERALL Clinical Stage: IIIB

Pathological T: T2
N: N0
M: M0

OVERALL Path Stage: yI

Responsible Oncologist: Select
Staged By: Select

In Progress  No Show  Cancel  Save  Signoff...
Prostate Disease Site
Patient Information

Medical Record Number: 987654321
Patient's Name: Sample Patient
Birth Date: 01/01/14  Gender: M

Source: CS
Record Creation Date: 04/07/14
Last Appt. Date: 04/07/14

Cases:

- Malignant - April 07, 2014

Disease is: Malignant
Reason for referral: New Diagnosis of Primary
Date of Diagnosis: Jan 1/2014
Site Group: Genitourinary
Malignant Disease: Prostate
Morbidity ICD-O-3: <No selection>

Appt Date: Apr 7/2014

Clinical T: Select
N: Select
M: Select

Pathological T: Select
N: Select
M: Select

PSA: Select
Gleason: Select

OVERALL Clinical Stage:

OVERALL Path Stage:

Prognostic Grouping:

Responsible Oncologist: Select
**Patient Information**

Medical Record Number: 987654321
Patient's Name: Sample Patient
Birth Date: 01/01/14 Gender: M

**Cases:** Malignant-April 07, 2014

Disease is: Malignant
Reason for referral: New Diagnosis of Primary
Site Group: Genitourinary
Malignant Disease: Prostate
Morphology ICD-O-3:

**81403 - Adenocarcinoma, NOS**

Clinical T: T1c
N: N0
M: M0
PSA: Select
Gleason: Select

OVERALL Clinical Stage: [Calculate Stages]

Pathological T: T3a
N: N0
M: M0

OVERALL Path Stage: [Select]

Responsible Oncologist: Select

Source: CS
Record Creation Date: 04/07/14
Last Appt. Date: 04/07/14
Cancer Staging Tool
Administrative System
Online Cancer Staging System Data

- With an audit function we can run a monthly report of cases to be completed and the staff use that report to select the cases they need to be completed.

- With the advanced search function we can identify cases using all the various data elements collected. For example you can easily call up all breast cases that are Stage II.
Summary

• The staging data collected in the tool along with the additional information in the Cancer Registry is used extensively for research, clinical and administrative purposes.

• Tool was built so that Registry staff can make updates, such as UICC 6th edition to UICC 7th edition.

• Audit process to ensure completeness of all cases.

• Tool was designed to allow for enhancements and additional data elements to be added as required:
  - Date of Diagnosis
  - Morphology
  - Clinical Decision Making Variables
    - ER/PR Her2Neu
Adding Site Specific Factors
Results of Using Out Staging Tool
Prostate 2011-2013

<table>
<thead>
<tr>
<th>Visit Year</th>
<th>Stage I</th>
<th>Stage II</th>
<th>Stage III</th>
<th>Stage IV</th>
<th>Stage Unknown</th>
<th>Total Analytic Cases</th>
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<td>213</td>
<td>461</td>
<td>145</td>
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<td>320</td>
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<td>50</td>
<td>0</td>
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