

## Radioimmunotherapy: New Treatment Options in Non-Hodgkin's Lymphoma

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## Radioimmunotherapy: New Treatment Options in NHL

### Objectives:

- Describe the incidence and prevalence of non-Hodgkin's Lymphoma (NHL) in the US
- List the advantages of radioimmunotherapy in NHL
- Compare approved radioimmunotherapy treatment protocols
- Explain radiation safety considerations in radioimmunotherapy
- Review 2004 coding and reimbursement

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## Non-Hodgkin's Lymphoma

- Most commonly occurring hematological cancer<sup>1</sup>
  - Expected new cases in 2004: 55,400<sup>1</sup>
  - Prevalence: approximately 300,000<sup>2</sup>
- 6<sup>th</sup> leading cause of cancer death in the US<sup>1</sup>
- 2<sup>nd</sup> fastest growing cause of cancer death in US<sup>1</sup>

1 ACS. Cancer Facts & Figures 2004.  
2 SEER Cancer Statistics Rev 1973-1999. Table XXIX-1.

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## Non-Hodgkin's Lymphoma

- **NHL is classified by:**
  - The type of lymphocyte (B-cell or T-cell)
  - The speed of growth (grade)
  - The degree of spread (stage)
- **85% of all NHLs are B-cell lymphomas<sup>1</sup>**
- **Over 90% of B-cell lymphomas express CD20+ antigen<sup>2</sup>**

<sup>1</sup> ACS. Detailed Guide (revised January 21, 2000): Non-Hodgkin's Lymphoma.  
<sup>2</sup> Anderson KC, et al. Blood 1984; 63(6):1424-1433.

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## Non-Hodgkin's Lymphoma

- **Follicular NHL<sup>1</sup>**
  - 2<sup>nd</sup> most common subtype of NHL
  - 20-40% of all adult lymphomas
  - Common in the elderly population
- **Low-Grade NHL**
  - Approximately 30% of diagnosed cases<sup>2</sup>
  - 40% curable – early dx
  - Advanced stages - incurable
  - Median survival ranges from 6-10 years
  - Often transforms to a more aggressive cell type with a median survival time of 1-2 years<sup>3</sup>

<sup>1</sup>Petry KAJ, et al. In: Grossbard ML (ed). Malignant Lymphoma. Hamilton: DC Decker 2002;96: 94-111.  
<sup>2</sup>ASH Educational Book, 2002.  
<sup>3</sup>Bartlett NL, et al. In: Haskel CM et al (ed). Cancer Treatment. Phila: WB Saunders. 2001:1376-1386.

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## NHL Treatment Options

- **Watch and wait**
- **Radiation therapy (localized disease)**
- **Chemotherapy (extensive disease)**
- **Immunotherapy (e.g. rituximab)**
- **High dose chemo - bone marrow/stem cell transplantation**
- **Combination therapy (e.g. chemotherapy + immunotherapy, or radiation therapy)**

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### NHL Treatment Outcomes

- Response rates are initially high, but patients ultimately relapse
- No conventional chemotherapy regimen is curative
- No regimen has been shown to be superior with regard to survival
- Patients need additional treatment options

In the absence of cure or survival benefit, treatments that induce remission and prolong time off therapy are valuable

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### Radioimmunotherapy Rationale

- Lymphocytes are inherently sensitive to radiation
- Monoclonal antibodies can be engineered to target antigens expressed on the surface of malignant and normal B-lymphocytes
- Monoclonal antibodies labeled with a radioactive component can deliver a targeted therapeutic dose of radiation to B-lymphocytes expressing the target antigens as well as neighboring tumor cells (crossfire)

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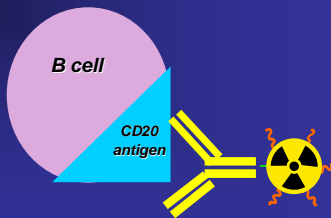
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### Targeted Therapy

- **CD20 antigen**
  - Expressed only on B-lineage cells
  - Important for cell cycle initiation and differentiation
  - Does not shed or modulate



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### Properties of Therapeutic Radiopharmaceuticals for RIT

	Physical half-life (hours)	Decay type	Particle energy (MeV)	Primary gamma energy (MeV)	Particle pathlength ( $\lambda_{90}$ , mm)
Y-90	64	$\beta$	2.293	None	5.3
I-131	193	$\beta, \gamma$	0.606	0.364	0.8

Kuzel. In: *Nuclear Medicine*. Vol 1. 1996:594; Zelenetz. *Curr Opin Oncol*. 1999;11:375-380; Wiseman et al. *Clin Cancer Res*. 1999;5(suppl):3281s-3286s. Press. *Semin Oncol*. 1999;26(suppl 14):58-65; Zimmer. In: *Nuclear Medicine*. Vol 1. 1996:511-515.

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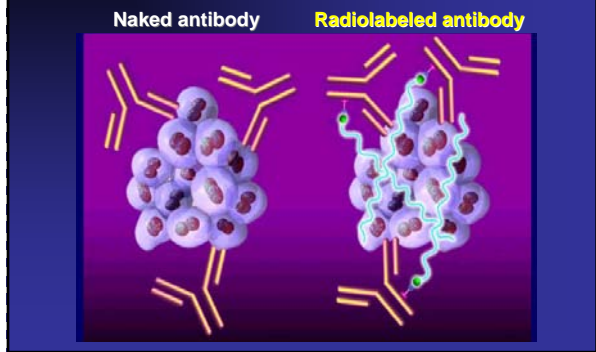
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### Crossfire Effect




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### Radioimmunotherapy High Response Rates

- Multiple clinical trials have demonstrated that radioimmunotherapy can achieve a high overall response rate (68%-80%) in a heavily pre-treated patient population with relapsed or refractory low grade, follicular, or CD20+ transformed lymphoma
- Impressive response rates (63%-74%) were also reported in Rituximab-refractory patients
- Median time in remission (time to progression) 1.1 - 35+ months confirms the efficacy of the therapeutic protocol.

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### Radioimmunotherapy Clinical Indications

- **Bexxar:**
  - Indicated for the treatment of patients with CD20 positive, follicular, non-Hodgkin's lymphoma, with and without transformation, whose disease is refractory to Rituximab and has relapsed following chemotherapy
- **Zevalin:**
  - Indicated for the treatment of patients with follicular B-cell NHL refractory to Rituximab and for patients with relapsed or refractory low-grade, follicular or transformed B-cell non-Hodgkin's lymphoma

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### Contraindications to Patient Selection

- Radioimmunotherapy should not be administered to patients who have greater than 25% bone marrow involvement with lymphoma and/or impaired bone marrow reserves, as indicated by:
  - Prior myeloablative therapies with ABM or PBSC transplantation
  - Platelet count <100,000 cells/mm<sup>3</sup> or ANC <1,500 cells/mm<sup>3</sup>
  - Hypocellular bone marrow (<15% cellularity; marked reduction in bone marrow precursors)
  - History of failed stem cell collection

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### Contraindications to Patient Selection

- Known type I hypersensitivity or anaphylactic reactions to murine proteins or to any component of the therapeutic regimen
- Negative pregnancy test for women of child-bearing age
- Normal renal function: serum creatinine < 1.5 x the upper limit of normal (**Bexxar only**)

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### Radioimmunotherapy Safety Summary

- The most common severe adverse events are primarily hematological and reversible
  - Monitored with weekly blood counts by the oncologist/hematologist
- Most non-hematological toxicities are mild in severity and include gastrointestinal symptoms (nausea, vomiting, abdominal pain and diarrhea), increased cough, dyspnea, dizziness, arthralgia, anorexia, anxiety and ecchymosis
  - Monitored by RN and/or physician at the time of infusion and followed, as necessary by nursing staff
- Human Anti-Mouse Antibody (HAMA) reaction (10% Bexxar, <2% Zevalin)
- Hypothyroidism (9-17% - Bexxar only)

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### Radioimmunotherapy A Team Effort

▪ Oncology/Hematology <ul style="list-style-type: none"><li>– Referring Physician</li><li>– Nursing staff</li></ul>	▪ Radiation Oncology <ul style="list-style-type: none"><li>– Radiation Oncologist</li><li>– Nursing staff</li></ul>
▪ Nuclear Medicine <ul style="list-style-type: none"><li>– Physician</li><li>– Physicist/RSO</li><li>– Technologist</li><li>– Nursing staff</li></ul>	▪ Utilization Review
▪ Radiopharmacy	▪ Billing/Reimbursement



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### Generic Equipment and Supplies

- Equipment:
  - Dual/Single head gamma camera system
    - Medium and/or high energy collimator(s)
  - Infusion Pump
    - Must accommodate a 10-60 cc syringe and a 10-20 minute infusion time
  - Appropriate survey equipment to accurately detect gamma and beta
  - Dose Calibrator
    - Geometrically qualified to calibrate <sup>90</sup>Y [Zevalin]

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### Yttrium-90 Dose Calibrator Qualification

- **Discussion:**
  - Dose calibrators are designed to assay gamma emissions
  - <sup>90</sup>Y is a pure beta emitter
  - Bremsstrahlung emitted by <sup>90</sup>Y is the only energy that can be assayed
  - To accurately assay <sup>90</sup>Y in the dose calibrator, it is recommended that the calibration settings for the dose calibrator be qualified using <sup>90</sup>Y (refer to state or federal guidelines and institutional policies)

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### Generic Equipment and Supplies

- **Syringe Shields:**
  - Lead - <sup>111</sup>In
  - Lead - <sup>131</sup>I
  - Plastic/acrylic or combo acrylic/lead or acrylic/tungsten - <sup>90</sup>Y
- **Syringe Pump Shield**
  - Lead
  - Acrylic/tungsten
- **Patient dose:**
  - <sup>111</sup>In Zevalin
  - <sup>90</sup>Y Zevalin
  - <sup>131</sup>I Bexxar (dx)
  - <sup>131</sup>I Bexxar (rx)
- **Injection Supplies:**
  - IV infusion sets with injection port
  - IV extension set
  - 50 mL, 100 mL, 250 mL 0.9% normal saline
  - .22 micron filter
  - Butterfly needle or angiocath
  - Gloves
  - Alcohol prep pads
  - 2 x 2 gauze pads
  - Paper/adhesive tape
  - Band-Aids
  - Absorbent pads
  - 3-Way stopcock

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### BEXXAR Therapeutic Regimen

<i>Dosimetric Step</i>	<i>Therapeutic Step</i>
<div style="background-color: #00FFFF; padding: 5px;"> <p><b>Day 0</b> 2 infusions: • 450 mg of Tositumomab • Iodine I 131 Tositumomab (5 mCi, 35mg) • Scan #1</p> </div> <div style="background-color: #00FFFF; padding: 5px; margin-top: 5px;"> <p><b>Day 2, 3, or 4</b> • Scan #2</p> </div> <div style="background-color: #00FFFF; padding: 5px; margin-top: 5px;"> <p><b>Day 6 or 7</b> • Scan #3</p> </div>	<div style="background-color: #ADD8E6; padding: 5px; text-align: center;"> <p><u>One day between</u> <u>Day 7- Day 14</u></p> </div> <div style="background-color: #ADD8E6; padding: 5px; margin-top: 5px;"> <p>2 infusions • 450 mg of Tositumomab • Iodine I 131 Tositumomab (individualized dose of radioactivity to give 65 or 75 cGy total body dose of radiation, 35 mg)</p> </div>

Thyroprotection: Day -1 continuing through 14 days post-therapeutic step

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### Obtaining Bexxar Dosimetric and Therapeutic Package

- Dose acquisition/preparation:
  - Commercial radiopharmacy (pending)
    - Cardinal Health - Mallinckrodt - Biotech
    - Amersham Health - Independents - Geodax
  - Site acquisition/inhouse preparation

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### Obtaining Bexxar Dosimetric and Therapeutic Package

- 2 Components:
  - Cold antibody (total infused volume 50 mL) - McKesson BioServices
    - Two single-use 225 mg vials Tositumomab
    - One single-use 35 mg vial Tositumomab
    - Kept refrigerated (2-8° C) until ready for use
  - I-131 Tositumomab (total infused volume 30 mL) - MDS Nordion
    - One single-use vial I-131 Tositumomab (12-18 mCi/vial – diagnostic dose, 112-168 mCi/vial – therapeutic dose)
    - Quality control performed at Nordion prior to shipment
    - Kept frozen (-20°) until ready for use

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### Concomitant Medication

- Oral thyroid blocking agents
  - starting 24 hours prior to the dosimetric dose and continuing for 2 weeks after receiving the therapeutic dose
    - SSKI 4 drops orally 3 times/day
    - Lugol's solution 20 drops orally 3 times/day
    - Potassium iodide tablets 130 mg orally once/day
- Acetaminophen 650 mg and diphenhydramine 50 mg
  - to reduce infusion-related events
  - 30 min prior to administration of each of the Tositumomab doses

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### Tositumomab Infusion

- Dosimetric dose
- Therapeutic Dose
- 50 mL Tositumomab (cold antibody) infused for: 60 minutes
- Flush infusion set with 0.9% NaCl

100 mL 0.9% NaCl

450 mg Tositumomab

Secondary IV set

Port

in-line 0.22 micron filter

Primary IV line and infusion set

Patient

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### Hypothesis: Effect of Unlabeled Antibody

- Occupy accessible non-tumor sites
  - circulating B cells
  - B cells in spleen
- Enhance penetration of Iodine I 131 Tositumomab into tumors
- Slower clearance of Iodine I 131 Tositumomab

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### Distribution of Effect of Unlabeled Antibody - BEXXAR

1 h post Iodine I 131 Tositumomab injection

R ANT L No pre-dose

1 h post Iodine I 131 Tositumomab injection

R ANT L Pre-dose

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### I-131 Tositumomab Infusion

- Dosimetric dose
- Therapeutic Dose
- 30 mL I-131 Tositumomab infused for: 20 minutes
  - Flush infusion set with 0.9% NaCl
- Measure residual activity

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### Whole Body Imaging

**Purpose:**

- Provides dosimetry counts for patient-specific dose calculation
- Allows assessment of biodistribution:
  - Therapeutic dose should not be administered if gross alterations in biodistribution are identified on the second or third scan

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### I-131 Tositumomab Imaging Sequence

- Anterior and posterior whole body, full field images acquired of:
  - Patient
  - I-131 calibrated source
  - Background
- Performed on:
  - Day 0: within 1 hour of dosimetric dose; pre-void
  - Day 2, 3, or 4: post-void
  - Day 6 or 7: post-void
- **Note:** Same camera, collimator and set-up must be used for each scanning session

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## Gamma Camera Requirements

- Single- or dual-head whole body camera with a LFOV and digital interface
- Parallel hole collimator rated to 364 keV with a septal penetration for I-131 of <7%
- Symmetric window (20-25%) centered on the 364-keV photo peak of I-131
- Matrix: minimum 128x128
- Scanning speed 10-30 cm/min
- Scan length: entire field
- Camera anterior height: **consistent for all scans**

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## Expected Biodistribution

- **Post Injection:**
  - Primarily blood pool activity
  - Liver/spleen < heart
- **24-72hrs and 120-144 hrs:**
  - ↓ Blood pool activity
  - ↓ Liver/Spleen activity
  - ↑ Tumor uptake
  - Possible uptake in thyroid, kidneys, urinary bladder and lung
- **Total body residence time 50-150 hrs (median ~ 90 hrs)**



Post Inj	24-72hrs	120-144 hrs
Day 0	Day 2,3 or 4	Day 6 or 7

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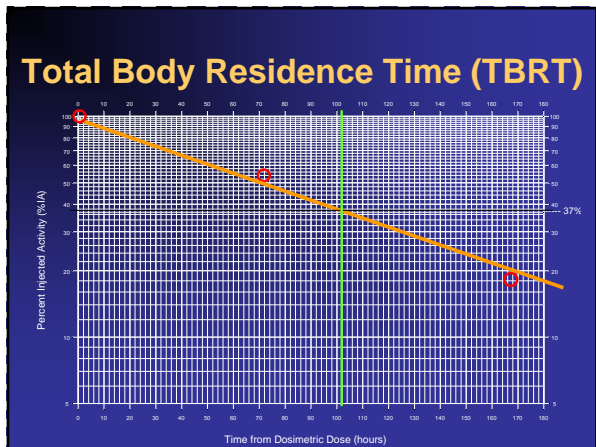
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### Altered Biodistribution

- **First Image (shortly after dosimetric dose):**
  - blood pool is not visualized (possible HAMA)
  - diffuse intense uptake in the liver and/or spleen
  - uptake suggestive of urinary obstruction
  - diffuse lung uptake > blood pool
- **Second and third image:**
  - uptake suggestive of urinary obstruction
  - diffuse lung uptake greater than blood pool
- **Total body residence time outside the range of 50 - 150 hrs**

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### Dosimetry for BEXXAR

- Optimal therapeutic results are achieved when I-131 Tositumomab is calculated to deliver a total body dose (TBD) of 75 cGy (65 cGy for patient w/platelet counts between 100,000 and 150,000/mm<sup>3</sup>).
- Dosimetry studies confirmed a 4-fold variation in the clearance rate (or effective half-life) of Iodine I 131 Tositumomab.
- Factors affecting clearance of the antibody include:
  - tumor size
  - Splenomegaly
  - bone marrow involvement
- Therefore, the administered amount of radioactivity (in mCi) must be adjusted individually to ensure that all patients receive the prescribed TBD.

Wahl R, et al. SNM 2001-42(Suppl):311P (abstract# 1293).

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### Critical Role of Dosimetry Achieve Equal Area Under Curve

**Rapid Clearance**

- large tumor burden
- large spleen size
- bone marrow involvement

**Slow Clearance**

- small tumor burden
- small spleen size
- no bone marrow involvement

Goldsmith SJ, et al. Proceedings ASCO 2001;20(pt 1 of 2):295 (abstract 1179); Seldin DW, et al. JNM Tech 2002;30:109-114

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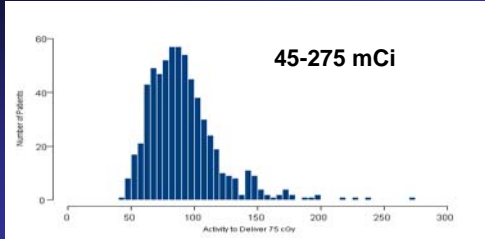
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### Dose Range Required to Deliver 75cGy Total Body Radiation



\* Targeted total body radiation dose 75cGy for patients with platelets 150,000/mm<sup>3</sup> or 65cGy for patients with platelet counts between 100,000 and 150,000/mm<sup>3</sup>.

Wahl R, et al. J Nucl Med 2001; 42(Suppl):311P (abstract 1293).

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### Calculation of Therapeutic Dose

- **Determine activity hours** to deliver a 75 cGy TBD
  - Look-up table by patient mass
- **Determine total body residence time**
  - Graph
- **Determine activity (mCi)** required to deliver a total body radiation dose of 75 cGy (65 cGy for patients with mild thrombocytopenia)

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### Calculation of Iodine I 131 Activity for Therapeutic Dose

<sup>131</sup>Iodine Activity (mCi) =

$$\frac{\text{Activity Hours (mCi h)} \times \text{Prescribed Total Body Dose (cGy)}}{\text{Residence Time (h)} \quad 75 \text{ cGy}}$$

= \_\_\_\_\_ mCi

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### **BEXXAR Certification Process**

- Formal site training provided by GSK/Corixa
- Accurate dosimetry calculations and residual activity measurements must be verified for three consecutive patients to complete certification
- After certification, *BEXXAR* Service Center will review calculations upon request

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### **Patient Release**

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### **Patient Release I-131 High Dose Therapy**

- 10 CFR 35.75 permits health care providers (licensees) to authorize the release of any individual receiving radiopharmaceuticals or permanent implants containing radioactive materials if the total effective dose equivalent (TEDE) to any other individual is not likely to exceed 5 mSv (500 mrem).

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### Patient Release I-131 High Dose Therapy

- Release of patients treated with *BEXXAR* is possible in 49 of the 50 states
- State-specific information is available through the *BEXXAR* Service Center

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### Patient Release

- Evaluate the patient's living and working conditions
- Perform a patient-release calculation to determine if the patient can be released
- Maintain patient release records for a minimum of 3 years
- Provide written instructions to the patient

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### I-131 Patient Release Instructions

- Oral and written instructions given to patients should address ways to achieve ALARA principles to other individuals including:
  - Maintaining distance
  - Separate sleeping arrangements
  - Minimize time spent in public places
  - Precautions to reduce the spread of radioactive contamination including urine, and other body fluids
  - Length of time for each precaution

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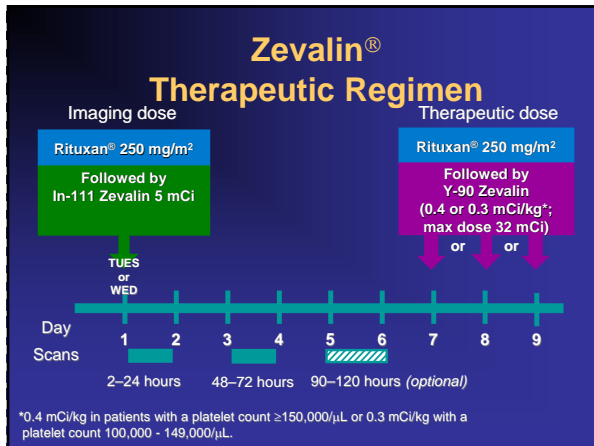
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### Calculate Patient Dose

- <sup>111</sup>In Zevalin® imaging dose is 5.0 mCi (in 10 mL)
- <sup>90</sup>Y Zevalin® therapy dose is based on patient's weight and platelet levels (in 4-8 mL)
  - 0.3 mCi/kg <sup>90</sup>Y Zevalin® -platelets 100,000 - 149,000
  - 0.4 mCi/kg <sup>90</sup>Y Zevalin® -platelets > 150,000

**NOTE:** <sup>90</sup>Y Zevalin® dose must not exceed 32 mCi

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### Obtaining Radiolabeled Zevalin®

- Nuclear medicine or radiation oncology places order for Zevalin® from local commercial radiopharmacy:
  - Cardinal Health (formerly Syncor and CPSI) - Biotech
  - Amersham Health - Independents - Geodax
- Radiopharmacy places order for Zevalin® components from Biogen Idec Pharmaceutical on a per-patient basis:
  - 2 Zevalin® cold kits
  - <sup>111</sup>In Chloride (supplied by radiopharmacy)
  - <sup>90</sup>Y Chloride (supplied from MDS Nordion as part of the cold kit package)
- Delivered to nuclear medicine as a unit dose

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### Zevalin® Storage

- Refrigerate Zevalin® (2 - 8 °C) if not ready for immediate injection
  - Shelf-life 12 hours - <sup>111</sup>In Zevalin®
  - Shelf-life 8 hours - <sup>90</sup>Y Zevalin®

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### Injection Technique: Radiolabeled Zevalin®

- Establish venous access attached to IV tubing and 250 mL of 0.9% sodium chloride bag or a 3-way stopcock
- Do not inject concomitantly with another IV solution or medication
- Place a 0.22 micron (low protein binding) filter between the 10 mL syringe containing the unit dose of Zevalin®
  - **Note:** Pre-wet the micron filter with 0.9% sodium chloride prior to attaching to 10 mL syringe and avoid introduction of air in the filter
- **SLOWLY** inject Zevalin® over 10 minutes
- Slowly flush line with at least 10 mL of 0.9% sodium chloride

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### Data Acquisition for <sup>111</sup>In Zevalin®

- Dual or single head gamma camera system
- Medium energy collimator(s)
- 172 and 247 keV with 15-20% window
- 256 x 1024 matrix
- Speed: 7-10 cm/min
- Scan times: 2-24 hours; 48-72 hours; optional 96-120 hours

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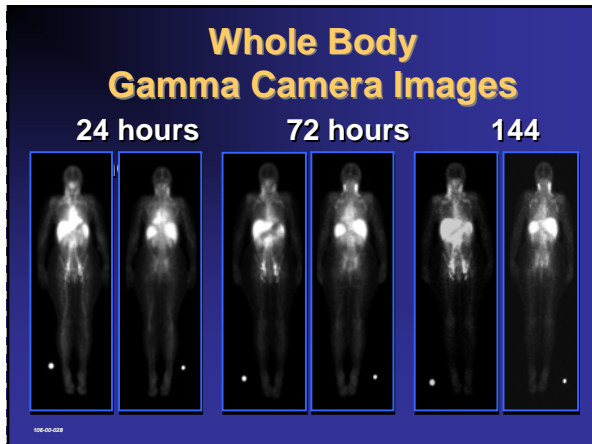
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### Expected Biodistribution

- Radioactivity in the blood pool on first image, less on second image
- High uptake in normal liver and spleen
- Low uptake in kidneys, urinary bladder, and bowel
- Tumor uptake visualized as areas of increased intensity
- **Decision: administer <sup>90</sup>Y Zevalin®**

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### Altered Biodistribution

- Blood pool not visualized on first image
- Lung uptake more intense than liver uptake on second image
- Kidney uptake greater than liver uptake on second image
- Diffuse intense uptake in bowel comparable to uptake in liver on second image
- **Altered biodistribution is rare—one patient identified in the clinical trials**

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### Injected Activity - <sup>90</sup>Y Zevalin®

- Same injection procedure as <sup>111</sup>In-Zevalin®
- Just prior to injection, assay the dose in the dose calibrator
  - Dial in the appropriate calibration setting determined for your dose calibrator
  - For most dose calibrators, once the reading has stabilized, *multiply the reading by a factor of 10 to determine the dose*
- Assay the residual activity in the syringe after injection to determine the total activity injected

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### Patient Release

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### Patient Release Instructions

- 7 days following administration:
  - Wash hands carefully after using the toilet
  - Avoid transfer of bodily fluids (saliva, blood, urine, stool)
  - Use condoms for sexual relations
  - Clean up spilled urine and dispose of blood contaminated material so that others will not inadvertently handle it
- Up to 12 months following treatment:
  - Use effective contraceptive methods

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# Radiation Safety

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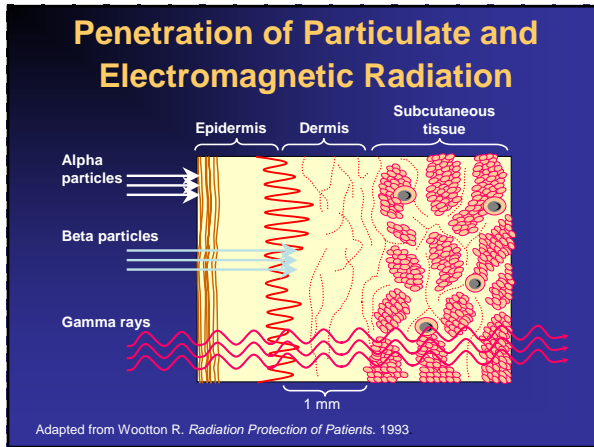
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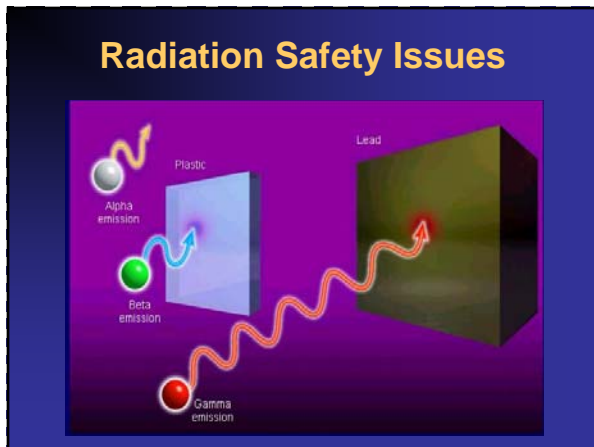
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## Safety Considerations to Minimize Exposure

- Exposure to health care workers can be low for multiple therapies each year providing that the basic principals for handling radioactive materials are adhered to including:
  - Minimize Time
  - Increase Distance
  - Maximize Shielding

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## Handling and Administration

- Examples of shielding:
  - Lead, aluminum/lead, or tungsten (gamma)
  - 1 cm Plexiglas or Lucite/acrylic (beta particles)
    - Lead, tungsten or aluminum/lead absorbs attenuate Bremsstrahlung emissions
    - Lead/acrylic, aluminum/lead/acrylic, or tungsten/acrylic stops  $^{90}\text{Y}$  beta particles and absorbs attenuates from Bremsstrahlung emissions
- With proper handling and shielding, exposure to personnel can be ALARA

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## Reimbursement Issues

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### Medicare Part A (HOPPS 2004)

- Bexxar
  - 2 new codes assigned
    - C-1080 dosimetric
    - C-1081 therapeutic
  - Cold Tositumomab will continue to be bundled under G-3001

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### Medicare Part A (HOPPS 2004)

- Wage Index Adjustment
  - will not apply to temporary C-codes 1080 or 1081
  - it will be applied to G-3001

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### Medicare Part A (HOPPS 2004)

- Procedure codes
  - CPT code 78804 multiple day scans 2 or more
  - CPT code 79403 radiopharmaceutical therapy, radiolabeled monoclonal antibody by IV infusion
  - CPT code 77300 Basic radiation dosimetry calculation

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### Bexxar Resources

- The *BEXXAR* Service Center  
**1-877-4-BEXXAR**
- The *BEXXAR* Website  
**www.BEXXAR.com**

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### 2004 Medicare – Part A Hospital HOPPS

Product/Procedure	Code	Description	APC	Payment	Prof. Comp
Tumor imaging – whole body	78804	Radiopharmaceutical localization of tumor or distribution of radiopharmaceutical agent(s); whole body requiring two or more days imaging	0406	\$650	2004 physician fee schedule TBD
Indium-111 ibritumomab tiuxetan	C1082	Supply of radiopharmaceutical diagnostic imaging agent, Indium-111 ibritumomab tiuxetan, per dose	9118	\$2260	

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### 2004 Medicare – Part A HOPPS

Product/Procedure	Code	Description	APC	Payment	Prof. Comp
Hematopoietic nuclear therapy	79403	Radiopharmaceutical therapy, radiolabeled monoclonal antibody by intravenous infusion	0718	\$550	2004 physician fee schedule TBD
Yttrium-90 ibritumomab tiuxetan	C1083	Supply of radiopharmaceutical therapeutic imaging agent, Yttrium-90 ibritumomab tiuxetan, per dose	9117	\$19,565	

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### Zevalin Coding – Private Payers

Product/Procedure	Code	Description	Payment
Indium-111	A9522	Indium-111 Zevalin	%AWP or Invoice
Imaging	78804	Radiopharmaceutical localization of tumor or distribution of radiopharmaceutical agent(s); whole body requiring two or more days imaging	Fee schedule, contracted rate, % of charge
Yttrium-90 Zevalin Administration	A9523	Yttrium-90 Zevalin per mCi based on 40 mCi/dose	%AWP or Invoice
Yttrium administration	79400	Radiopharmaceutical therapy, non-thyroid, non-hematologic	Fee schedule, contracted rate, % of charge

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### Zevalin Resources

- Information for Zevalin® Therapy:  
**1-877-433-4332**
- Reimbursement questions:  
**1-800-386-9997**

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### Radioimmunotherapy: Summary

- High response rate in relapsed or refractory, low grade, follicular or transformed CD20+ B Cell NHL
- Toxicities (adverse events) related to radioimmunotherapy are primarily hematologic, transient and reversible

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### Radioimmunotherapy: Summary

- Successful administration of the therapy protocol requires a multidisciplinary team effort
- Imaging performed:
  - As an additional safety measure
  - To verify expected biodistribution
  - To calculate patient specific therapy dose (Bexxar)
- Dosing based on clinical parameters and patient weight or residence time
- Short treatment course with comparable outcomes to other therapeutic regimens (chemotherapy, immunotherapy, radiation therapy)

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### Radioimmunotherapy: Summary

- Treatment is completed in 7–14 days
- Safety issues manageable:
  - Exposure to health care workers can be ALARA when appropriate time, distance and shielding guidelines are followed
  - Therapy procedures can be performed as a routine outpatient procedure
  - Results in minimal disruption to patients' routines

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