Reporting Common Isodose Planning Codes and Associated Components

AAMD 2011

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Presented by Deborah Churchill, president of Churchill Consulting, Inc. for AAMD 2011.

- Thank you for allowing me the opportunity to present this information.

Presentation Agenda

- Personnel
- Simulation
- Basic Dosimetry
- Isodose Planning
- Advanced Technologies
- Devices

- Who Does What??
- Actual vs. Virtual
- What's often missing
- When do we charge 2D plans
- Reporting 3D & IMRT
- What DOS do we report

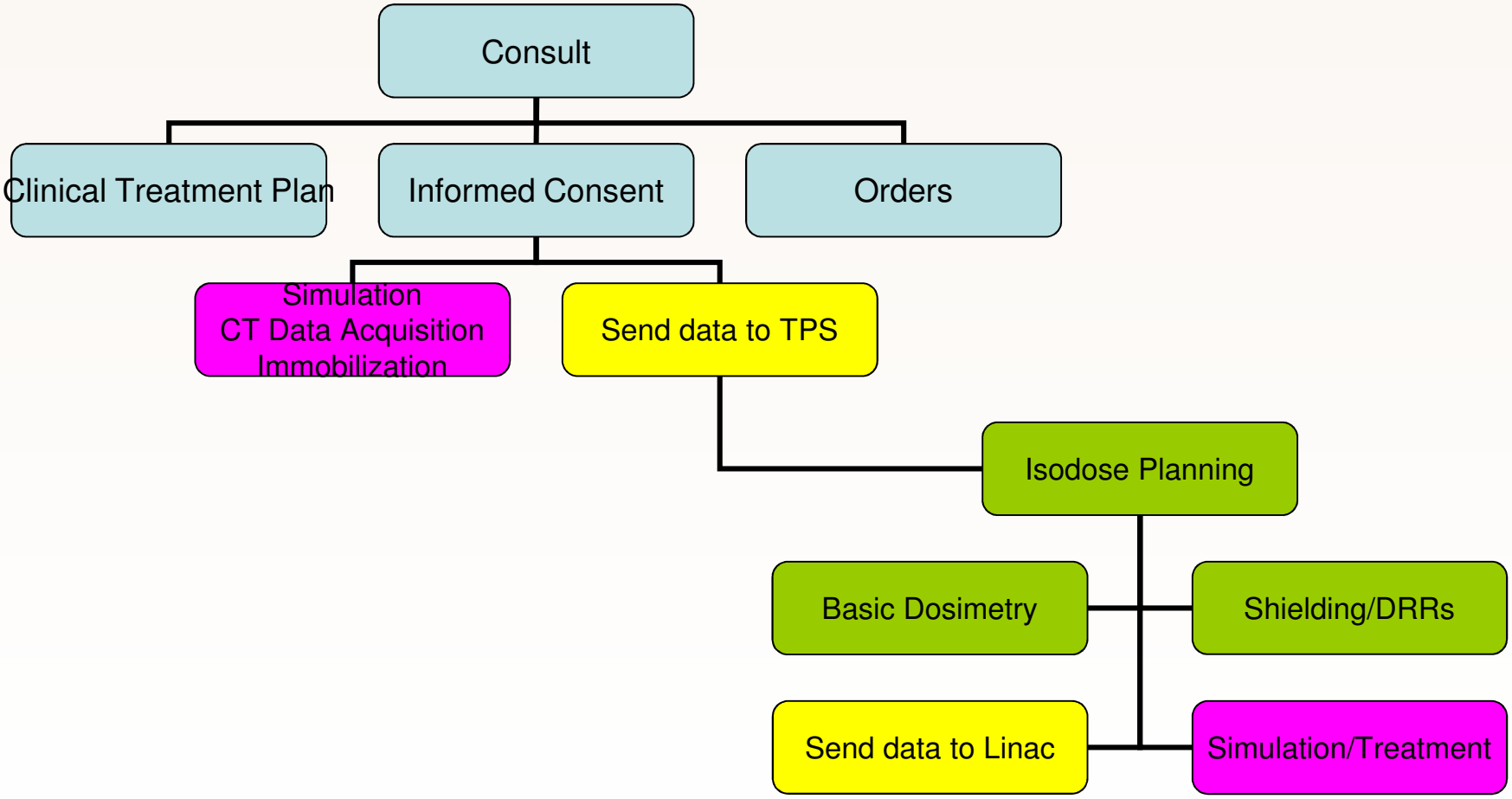
Simulation (Reportable vs. Virtual)

Let's begin at the beginning…..

which is a very good place to start.

Nope, not sound of music, standard course process, we begin with simulation.

Steps in all Courses



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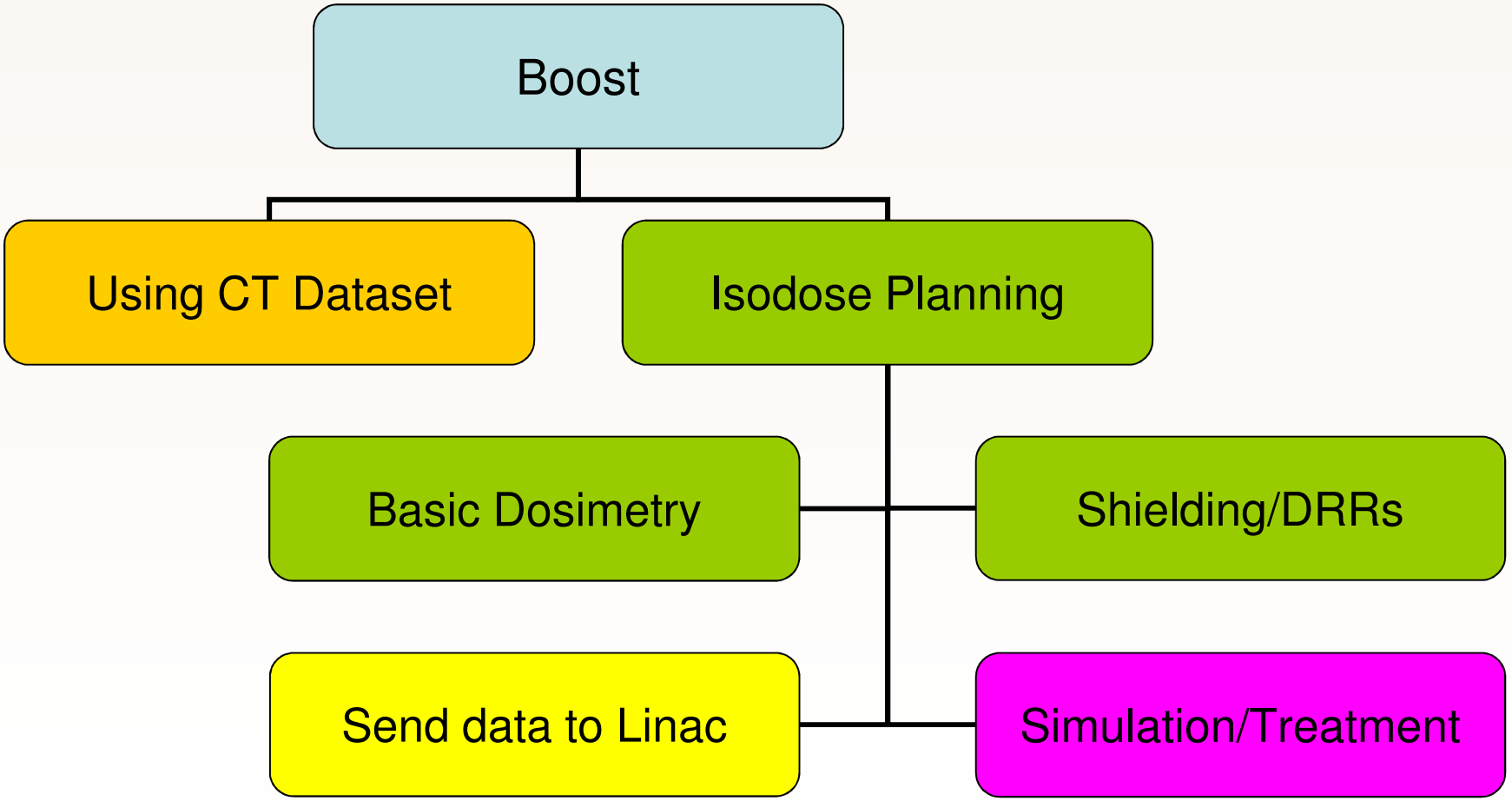
Steps in all Courses



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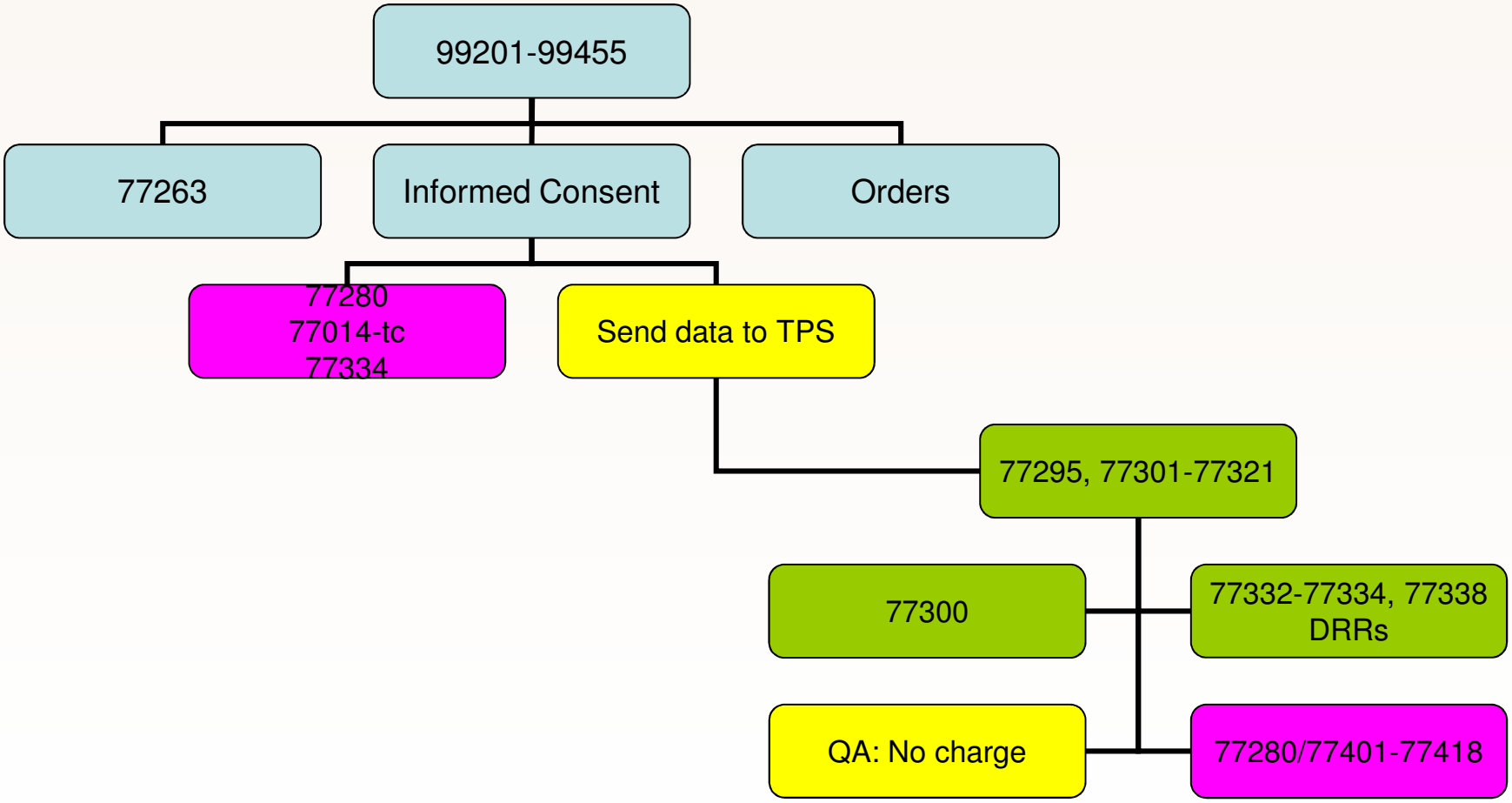
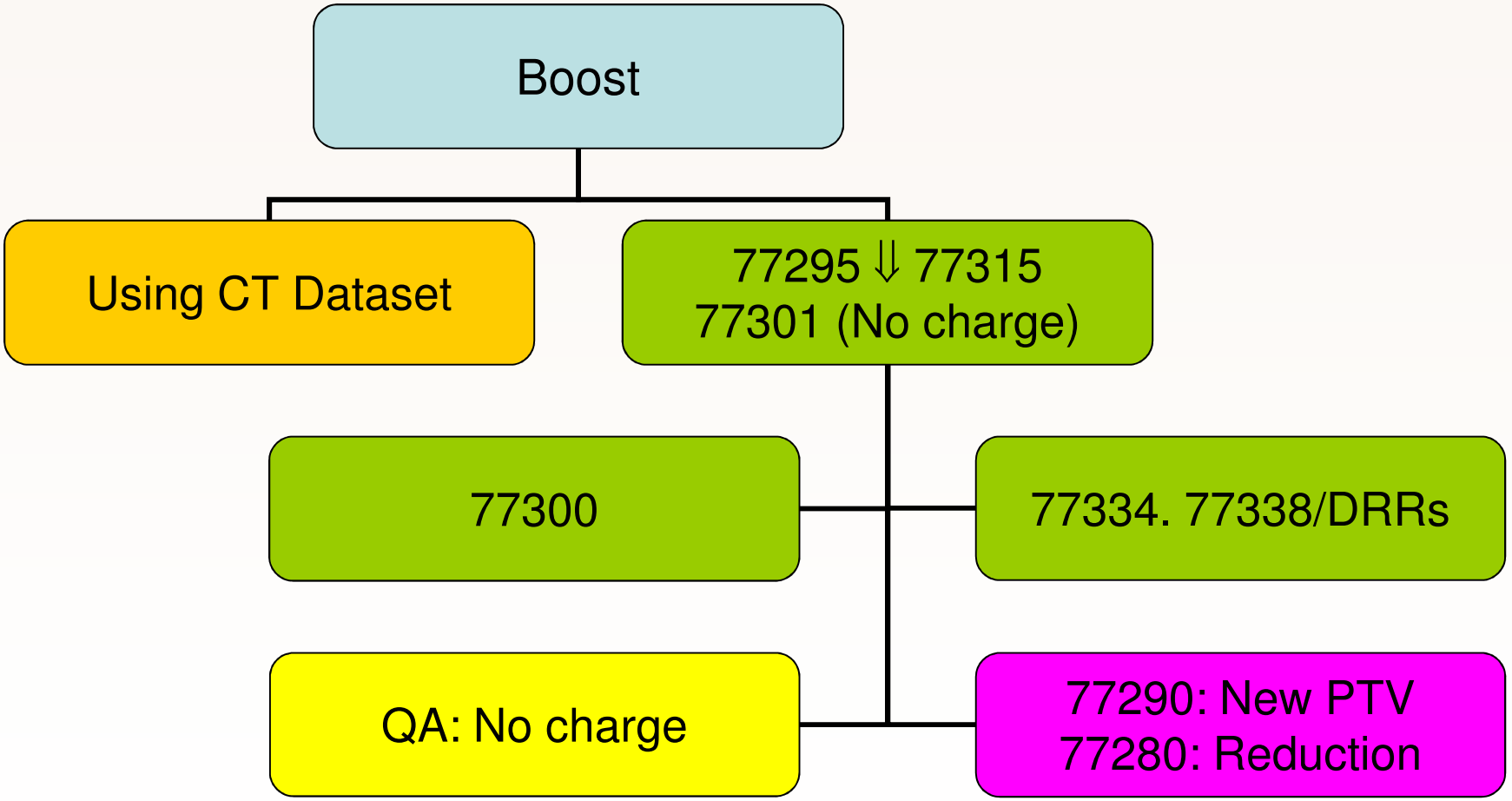


Steps in all Courses



Personnel: Therapists

Simulation

- The establishment of the area(s) of treatment is termed simulation.
  - Simulation is carried out by an RT(T) or RT(R) under the direction of the Radiation Oncologist.

Personnel: Dosimetry

Dose Calculation and/or Computer Planning

- Dose calculations may be carried out by hand or by computer
  - Performed by the Radiation Oncologist, Medical Physicist, Dosimetrist or RT(T)

Personnel

Summary Personnel

- Therapists report simulations
- Planning is reported by (dosimetry)
  - Physics staff does not perform or report simulations

Virtual Design

Who Reports What

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Simulation Equipment

AMA Description

- Simulation may be carried out on a dedicated simulator, a radiation treatment unit, or diagnostic x-ray machine.

Simulation Equipment

Sample Carrier Description

- Following treatment planning (that's the clinical TP), simulation is used to actually direct the treatment beams to the specific volumes of interest.
- Simulation may be carried out on a dedicated conventional simulator or CT scanner, radiation therapy treatment unit (e.g., linear accelerator), or using diagnostic imaging equipment (e.g., fluoroscopy, Pet scan, CT, MR, ultrasound or virtual reality-based 3D simulation system).

Equipment

Confusion:

- Although the physician may utilize a CT, PET, or MRI dataset to ‘virtually’ design the portals, this reference is strictly in regard to the portal design; there are no beams (isodose) involved.
  - Common misconception is that when fields are ‘virtually’ designed on the TPS, that constitutes a simulation; which is incorrect.
  - The work done on the TPS = planning and/or shielding design.

Typical Course

- The complexity of simulation is based on the number of ports, volumes of interest, and the inclusion and type of treatment devices.
- However the number of films taken per treatment, the modality from which images for simulation are obtained, and the use of fluoroscopy are not determinants of complexity.
  - Note: A simulation requires the patient, MD and hard copy images (films).

Typical Course

- Portal changes based on unsatisfactory initial simulation(s) are not reported as additional simulations.
- Additional simulations may be necessary during treatment in order to account for changes in port size, boost dose, or tumor volume

Virtual Design

Virtual Design Process

- Portals must be designed
- The design of portals using a dataset results in digitally reconstructed radiographs (DRR).
  - The virtual design of the portals, using a CT dataset, demonstrates the portal placement with/without shielding
    - Physics staff reports planning
    - Therapists report simulations

Simulation (Reportable vs. Virtual)

Physics does NOT report a simulation for the virtual design of the portals.

- *Physics does report the isodose planning associated with the portals.*
- *The DRRs document the shielding; physics can report the devices.*

Simulation – Planning Sequence

Definition - Levels

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Simulation (Definition)

- Simulation is used to set the radiation therapy treatment portals to specific treatment volumes.
  - Only a physician with extensive knowledge of the location and extent of the patient's condition can complete this process.
  - Simulation is carried out by an RT(T) or RT(R) under the direction of the Radiation Oncologist.

Simulation (Requirements)

- Simulation
  - Requires the PATIENT
  - Done by therapist
  - Requires real-time physician review of images
- Documentation
  - Written record of procedure
  - Hard copy of electronic image review by physician (including signature and date of review)

Simulation - Planning

2D

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2D - Simulation

Types of Simulation-Planning (2D)

- Standard simulation (77280-77290)
  - Establishes patient position
  - May include immobilization
  - Establishes portals
    - Reported by therapist

2D - Planning

Types of Simulation-Planning (2D)

- Isodose Planning (77305-77321)
  - Standard 2D isodose planning, prn
  - MU calculations
    - Reported by dosimetry staff

2D Course Summary

Initial	
77280-77290	Simulation
77305-77321	Isodose planning, prn
77300 x #	MU calculations
77332-77334 x #	Devices, prn
77280	BVS simulation, prn

2D Course Summary

Boost	
77305-77321	Isodose planning, prn
77300 x #	MU calculations
77332-77334 x #	Devices, prn
77280-77290	Simulation

Simulation - Planning

3D

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3D – Pre Planning Simulation

Types of Simulation-Planning Pre-planning simulation (77290)

- Done in preparation for 3D planning
- Establishes patient position
- May include immobilization
- Will include reference points (i.e., 3 points – zero axis)
- Requires a dataset for isodose planning, sent to TPS
  - Reported by therapist

3D - Planning

Types of Simulation-Planning (3D)

- 3D Isodose Planning (77295)
  - 3D isodose planning will be reported
  - Requires dose cloud or DVH
  - Must have documented medical necessity
  - Although called '3D simulation', this is the isodose planning phase as dose distribution is demonstrated
    - Reported by dosimetry staff

Simulation (Confirmation 3D)

Confirmation Simulations Following 3D

- Performed on linac or simulator (77280)
  - Requires patient, performed by therapist, real-time physician participation
  - Results in hard copy images (evidence of review by MD) of all portals
    - BVS: Confirms placement of blocks
    - Hard copy images (evidence of review by MD)
    - Simulation procedure note
      - » Reported by therapist

3D Course Summary

Initial	
77290	Pre-Planning Simulation
77295	Isodose planning, prn
77300 x #	MU calculations
77332-77334 x #	Devices, prn
77280	BVS simulation, prn

3D Course Summary

Photon Boost

77315	Isodose planning
77300 x #	MU calculations
77334 x #	Devices, prn
77280-77290	Simulation

3D Course Summary

Electron Boost

77321	Special teletherapy port plan
77300 x #	MU calculations
77334 x #	Devices, prn
77290	Simulation

Simulation - Planning

IMRT

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IMRT – Pre Planning Simulation

Types of Simulation-Planning (3D & IMRT)

- Pre-planning simulation (77290)
  - Done in preparation for 3D or IMRT planning
  - Establishes patient position
  - May include immobilization
  - Will include reference points (i.e., 3 points – zero axis)
  - Requires a dataset for isodose planning, sent to TPS
    - Reported by therapist

IMRT - Planning

Types of Simulation-Planning (IMRT)

- IMRT Isodose Planning (77301)
  - IMRT isodose planning will be reported.
  - Must have documented medical necessity
  - Requires DVH, phantom work
    - Reported by dosimetry staff

Simulation (Confirmation IMRT)

Confirmation Simulations Following IMRT

- Performed on linac or simulator (77280)
  - Requires patient, performed by therapist, real-time physician participation
  - Results in hard copy images (evidence of review by MD) of all portals
    - Confirmation of Isocenter: Orthogonal images
    - Hard copy images (evidence of review by MD)
    - Simulation procedure note
      - » Reported by therapist

IMRT Course Summary

Initial	
77290	Pre-Planning Simulation
77301	IMRT Isodose planning, prn
77300 x #	MU calculations
77338 x 1	IMRT MLC Devices (per plan)
77280	Isocenter simulation, prn

IMRT Course Summary

IMRT Boost

77300 x #	MU calculations
77338 x 1	IMRT MLC Devices

- NO Simulation
- NO Plan

Simulation - Planning

BOOSTS

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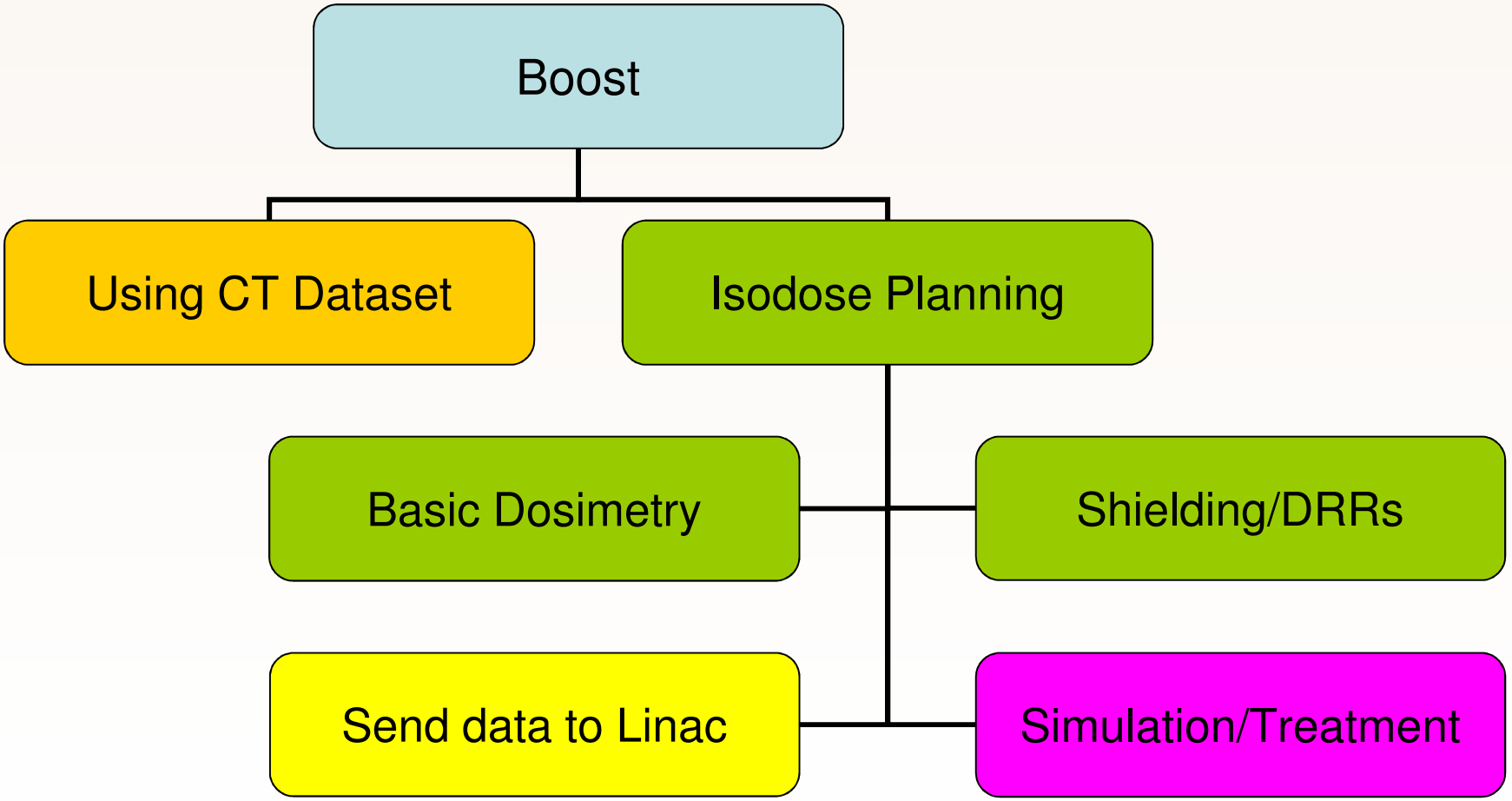
Steps in all Courses



Boosts

Boost Design

- When the same CT dataset is used, the boost portals are usually designed ‘virtually’
  - DRRs will demonstrate the portals w/wo shielding
    - Physics
      - Will report the isodose planning
      - Will report the shielding, as demonstrated on the DRRs, for the boost portals.
    - Therapists
      - Will report a simulation when the portals are confirmed on the PATIENT, documented, requires physician

Boosts

Boost Simulations

- Portals may be designed ‘virtually’ using CT dataset in TPS.
- The portal design is demonstrated via DRR
  - Physics can report
    - the shielding (77332-77334)
    - the planning (77305-77301)
    - the calculations (77300)
  - Therapists can report
    - The simulation (77280-77290)

Planning

Discussion of codes reported by dosimetry

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Planning

Reporting Planning:

- Planning includes calculations, isodose planning, shielding design
- The type of calculations will depend on the order, type of data source, and medical necessity.

Planning

Following simulation, doses are calculated to portals

- The majority of centers have dedicated CT simulators
  - Electronic datasets are sent to the TPS
- Physics (staff) performs the planning
  - Level of planning based on work ordered and done
  - Basic dosimetry (MU) calculations must be ordered, be separate & distinct from isodose planning, must be signed by MD.

Basic Dosimetry

77300

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Basic Dosimetry

77300

Basic radiation dosimetry calculation, central axis depth dose calculation, TDF, NSD, gap calculation, off axis factor, tissue inhomogeneity factors, calculation of non-ionizing radiation surface and depth dose, as required during course of treatment, **only when prescribed by the treating physician.**

Basic Dosimetry

Performed by:

- This calculation is done either by the radiation oncologist, the medical radiological physicist, the medical treatment-planning dosimetrist, or the radiation therapist under the technical supervision of the radiation oncologist.

Basic Dosimetry

Timing

- This code may be reported any time during a course of radiation therapy in which a calculation is done, as many times as necessary.
- Each procedure should have the appropriate documentation in the chart.
  - The DOS must correspond with the documentation in the MR.

Basic Dosimetry

Independent Calculation Required

- To report monitor unit calculations, there must be a second algorithmic calculation that is separate and distinct from the isodose plan.
  - The calculations generated by the isodose plan are not reportable.

Basic Dosimetry

Documentation

- Order
- Identification of all body area(s) being treated and requiring dosimetry calculations
- An explanation of any additional calculations

Basic Dosimetry

Documentation

- The calculation of the radiation dose distribution (i.e., the radiation dosage and length of time to deliver the dose) either by hand calculation or computer
- Evidence that the approved calculations were reviewed, signed and dated by both the qualified medical physicist or dosimetrist *(whoever did the work)* and the physician

Basic Dosimetry

Quantity

- A basic dosimetry may be reported for each separate calculation required.

Instructions for Claim

- When over six dosimetry calculations are reported, the documentation on the claim must support the medical necessity.

Basic Dosimetry

Quantity

- Most LCD (local coverage determination) policies state that the typical course of radiation therapy will require from one to six (1-6) dosimetry calculations, depending on the complexity of the patient's problem.
- Policy allowances range from eight to ten (8-10) calculations for head/neck, prostate and Hodgkin's disease.

Basic Dosimetry

Quantity

- Aetna's coding update in March 2010 stated that when basic dosimetry is billed, ten (10) units of 77300 per date of service and 20 units per course of therapy will be allowed.

Basic Dosimetry

Medical Necessity

- Supporting medical necessity for basic dosimetry calculations that exceed that 'standard' number must be documented by the physician in the medical record.
- The necessity of any repeated dosimetry must be clearly documented.

Basic Dosimetry

Medical Necessity

- The record will need careful and detailed documentation explaining factors such as multiple isocenters, irregularity of target volume(s), proximity of critical structures or other reasons which justify the units of service for dosimetry that exceed the norm.

Basic Dosimetry

RAC Review

- Medicare is using Recovery Audit Contractors (RAC) to identify underpayments and overpayments and to recoup overpayments under Part A and Part B of the Medicare program.
  - Beginning in September 2010, code 77300 [basic dosimetry] became the focus of a RAC review (IL, IN, KY, MI, MN, OH, WI) and Part B claims are being reviewed for overpayment.

Basic Dosimetry

CCI: Correct Coding Initiative Edits

- Medicare's correct coding initiative publishes code groups that define what codes may or may not be reported together.
  - Basic dosimetry may not be reported on the same day as special dosimetry (77331)

Basic Dosimetry

MUE: Medically Unlikely Edits (MUEs)

- MUE may place limits on the total number of basic dosimetry calculations allowed on the same date of service.
  - Although CMS publishes most MUE codes/quantities, other MUE values are confidential and for contractor's use only.
    - The published MUE list does not include a limit for code 77300. However, the number of 77300 services allowed will be reflected in your internal scrubbers, which usually limit the quantity to six on a single claim line.

Basic Dosimetry

Scrubbers

- A max of 6 will result in only this quantity being reported on one line on the claim.
    - Check your carrier policy for restrictions.

Basic Dosimetry

Mirror Calculations

- Mirror images result in one (1) calculation.
  - For example, when you have a four field portal arrangement with midline calculations, one calculation is reported per mirror portal; 2 calculations would be reported for 4 portals.

Basic Dosimetry

3D Calculations

- A basic dosimetry may be reported for each 3D calculation that is supported by a second algorithmic calculation.
  - This must be an independent calculation, ordered and performed to confirm the 3D isodose plan.

Basic Dosimetry

IMRT Calculations

- A basic dosimetry may be reported for each IMRT calculation that is supported by a second algorithmic calculation.
  - This must be an independent calculation, ordered and performed to confirm the IMRT isodose plan.

Basic Dosimetry

IMRT Calculation Restrictions

- The phantom work or QA may not be reported as a calculation, as that work is a requirement in the inherent work of IMRT isodose planning, code 77301.
  - Policies advise that it is not appropriate to report this service for the films, phantoms or equivalent done as a part of the 77301 or as may be a part of a separately performed and billed 77370.

Basic Dosimetry

IMRT Arcs

- One calculation is reported, per arc, provided that a separate and distinct calculation is available.
  - VMAT (*Volumetric Modulated Arc Therapy*) is a type of IMRT; the same rules apply – 1 calculation per arc

Basic Dosimetry

SRS Calculations

- Depending on the technology used, there may be a large number of beams that have separate monitor units or times calculated.
  - For example, a GammaKnife treatment may include 50-65 'shots'. A dosimetry calculation would not be reported for each shot. Rather, a representative number, maximum of 10, would be reported.

Common Errors

77300

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Common Errors

The most common 77300 errors are:

1. Missing order for MU.
2. Reporting basic dosimetry without second algorithmic calculation.
3. Reporting 77300 for MapCheck IMRT QA work
4. Reporting excessive quantity of calculations
5. Missing physician signature on calculations

Solutions

Prevent errors by:

1. Check for orders.
2. Have a second algorithmic calculation for all cases.
3. Only report MU calculations for IMRT that are supported by separate application.
4. Limit quantity reported, report boost when implemented.
5. Put calculations in MD task list for signing.

Standard Isodose Planning

77305-77321

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Isodose Plans

Isodose-line

- A two-dimensional line that circumscribes an area receiving a dose greater than or equal to a specified amount.

Isodose Plans

- Isodose plans are essential to ensure that treatment volumes receive the prescribed dose of radiation.
  - A teletherapy isodose plan determines the radiation dose within the target volume (TV Target Volume) and to surrounding volumes of normal tissue (PTV Planning Target Volume).
  - An isodose plan is calculated using computer-based measurements of radiation beams produced by the treatment unit by the qualified medical physicist.

Isodose Plans

Documentation

- The physician's documentation must be specific to the number of volumes of interest.
  - The specific location of tumor(s) to be treated must be documented as well as the specific number of ports involved with each volume of interest treated.

Isodose Plans

Approval

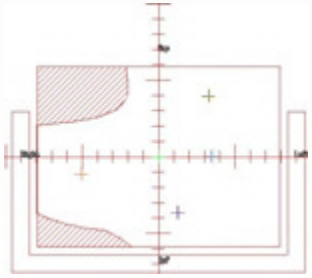
- All isodose plans must be checked and signed by the medical radiological physicist and the radiation oncologist.

Isodose Plans

Standard Isodose Planning

77305 Simple Isodose Plan

- Teletherapy, isodose plan (whether hand or computer calculated); simple (one or two parallel opposed unmodified ports directed to a single area of interest)
- Most common use: irreg



Isodose Plans

Standard Isodose Planning

77310 Intermediate Isodose Plan

- Teletherapy, isodose plan (whether hand or computer calculated); intermediate (three or more treatment ports directed to a single area of interest)
- Most common use:
  - Description is from the 60s when open portals were common
  - Hardly ever; this type of work is no longer performed

Isodose Plans

Standard Isodose Planning

77315 Complex Isodose Plan

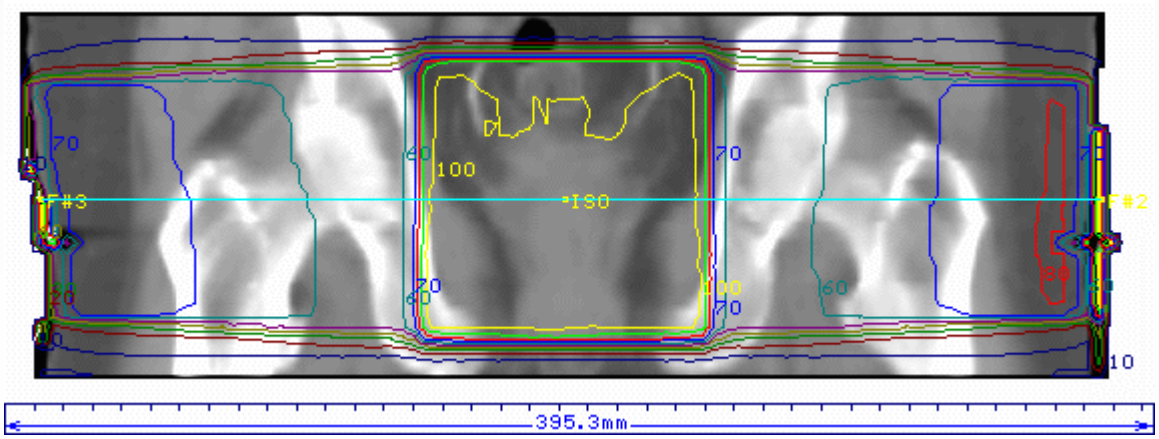
- Teletherapy, isodose plan (whether hand or computer calculated); complex (mantle or inverted Y, tangential ports, the use of wedges, compensators, complex blocking, rotational beam, or special beam considerations)
  - (Only one teletherapy isodose plan may be reported for a given course of therapy to a specific treatment portal)

Isodose Plans

Standard Isodose Planning

77315 Complex Isodose Plan

- Most common use
  - Central axis plans with custom shielding
  - Boost plan following 3D planning



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Isodose Plans

Standard Isodose Planning

77321 Special Teletherapy Port Plan

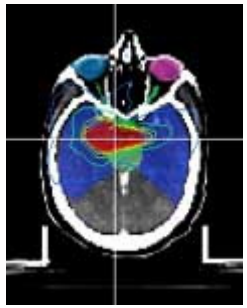
- Special teletherapy port plan, particles, hemibody, total body
  - This code is used when a plan for any special beam consideration is required. The use of electrons as a portion or as the main modality for treatment of a particular problem is an example.

Isodose Plans

Standard Isodose Planning

77321 Special Teletherapy Port Plan

- Most Common Use
  - Graphical electron isodose plan
  - For electrons, this code may only be reported if there is an electron isodose plan available, otherwise only report basic dosimetry via 77300.



Common Errors

77305-77321

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Common Errors

The most common errors are:

1. Reporting both 77321 & 77315 for the same electron plan
2. Reporting 77321 multiple times in same course
3. Reporting 77315 for composite plans
4. Reporting 77315 for IMRT boost plan

Solutions

Prevent errors by:

1. Report 77321 for electron plans if there is an isodose plan
2. Audit electron coding, limit is one 77321 per course
3. Audit plans; number equals PTV
4. Audit IMRT courses; only report 77301

Advanced Technology Planning

3D & IMRT Isodose Planning

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Documentation

- Orders
  - Level of isodose planning must be ordered
    - Remember, basic dosimetry must also be ordered
- Medical Necessity
  - Required for all 3D and IMRT level planning
- Approval
  - Physician & physicist approval (signed & dated)

Things to Know

3D Planning: 77295

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Things to Know: 3D

Simulation Category

- Three-dimensional computerized *simulation* performed on a *treatment planning system* that has the capability of three-dimensional display of the tumor and surrounding critical tissues in relationship to the internal and external landmarks of the body.

Things to Know: 3D

Requires Multiple/Moving Beams

- 3D utilizes documented three-dimensional beam's eye view volume-*dose* displays of multiple or moving beams.

Things to Know: 3D

Requires DVH

- A reconstruction and three-dimensional representation of dose distribution in the form of dose clouds and/or dose volume histograms of the volume interest and appropriate critical structures with evidence of review by the physician designated by the physician's signature or initials and date.
  - A CT dataset does not automatically result in 3D isodose planning.

Things to Know: 3D

Reported 1 x per course

- In most circumstances, the anatomy and the planning tumor volume for the highest dose regions will not change throughout the treatment course.
- Therefore, in general, a single 77295 activity and reimbursement shall suffice.

Things to Know: 3D

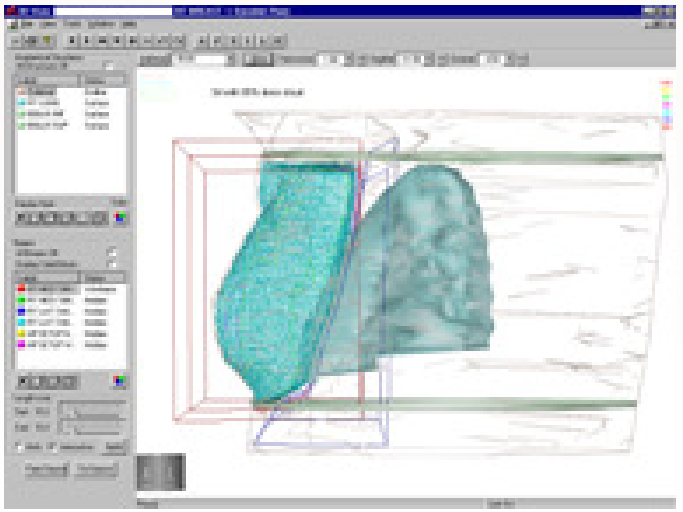
Reporting second 3D plan – same course

- In those uncommon circumstances where there is a substantial change in either patient anatomy or tumor conformation where a second CT dataset is required to produce an accurate, efficacious and safe "cone-down" plan, a second 77295 charge may be appropriate.
- When the physician deems this to be the case, the medical necessity for the second 77295 simulation must be documented.

Things to Know: 3D

Volume of Interest

- Planning a volume of interest that is irregular and in close proximity to normal structures that must be protected qualifies for 3D.



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Things to Know: 3D

Boost Planning

- A boost plan from the original CT dataset is reported via 77315.

Things to Know: 3D

SRS 3D Planning

- Code 77295 is reported once for each SRS session based on a unique image set and treatment plan regardless of the number of lesions treated.
  - A single image set is used in the generation of each SRS plan. The plan includes all lesions treated in a single or separate planning dose matrix.

Things to Know: 3D

Brachytherapy 3D Planning

- When reporting 3D for brachytherapy, the scan images used for 3D planning should be based on three-dimensional depictions of the implanted site.
- The source positions may be digitized directly from these images or the 3D reconstruction and TV and normal tissue may be merged electronically.

Things to Know: 3D

Brachytherapy 3D Planning

- Simple 3D representations by treatment planning computer programs derived from planar radiographic images ARE NOT adequate justification for the use of this code.
- 77295 is reported at the post implant phase, provided that a CT dataset is obtained for planning.

Common Errors

77295

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Common Errors

Report Planning – Not the Equipment

- Reporting 77295 every time you have a CT data acquisition on dedicated CT simulator
  - No, report CT data acquisition via 77014-tc
- Reporting 77295 for MammoSite simulation when done on dedicated CT simulator.
  - No, report 77280 for MammoSite simulation

Common Errors

CT does not automatically = 3D

- Reporting 77295 for simple portal arrangements because there is a CT dataset.
  - Report the planning based on work performed. CT dataset doesn't automatically qualify for 3D planning.

Common Errors

Same Day/Quantity Restrictions

- Reporting simulation and planning same day.
  - 77295 is simulation category; CCI Edits restrict reporting simulation and planning on the same day.
- Reporting 77295 per SRS lesion.
  - One SRS plan, all lesions

Common Errors

Boost Plans

- Reporting second 77295 for boost using the original dataset.
  - Report 77315 for boost.
- Reporting initial and boost plan same day.
  - Only one level of planning may be reported.
  - CCI Edits restrict reporting two levels of planning on the same day.

Things to Know

IMRT Planning: 77301

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Things to Know: IMRT

- 77301 Intensity modulated radiation therapy (IMRT) plan, including dose volume histograms for target and critical structure partial tolerances, inverse plan optimization performed for highly conformal distributions, plan positional accuracy and dose verification, per course of treatment.
  - Reported x 1 per course.
    - Included in 77301
      - – Phantom work, MapCHECK, film dosimetry

Things to Know: IMRT

CCI Edits restrict reporting:

- Any level of isodose planning on the same day as 77418.
  - When reporting IMRT isodose planning, no other isodose planning is reported for the course!
- Special dosimetry
  - Code 77331 may not be reported any time during IMRT course

Things to Know: IMRT

Inverse Plan

- Most carrier policies state ‘signed inverse plan’ to qualify for IMRT.
  - Field-in-field technique does NOT qualify for IMRT.
  - Forward planned breast plans do NOT qualify for IMRT.

Things to Know: IMRT

IMRT Devices

- IMRT MLC is reported via 77338 x 1 ‘per plan’
  - This code is reported for the initial plan and again for the boost plan.

Common Errors

77301

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Common Errors

Reporting Boost Plan

- No other isodose planning may be reported with course of IMRT.
  - Yes, last year there were publications that recommended reporting 77315 for the boost plan.
  - However, there were always CCI Edits, and that recommendation was incorrect.

Common Errors

- Reporting Boost MLC at beginning of course
  - The DOS must match the MR.
  - Documentation of physician participation in the design/selection/placement of devices is signified by the physician's signature and date on simulation images and port images.
    - Report the boost devices when implemented, documented via images.

Quick Sample Regimen

2D

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Quick 2D

Simulation	Design portals *(level based on design)*
Planning	77305-77321
MU	77300
Shielding	77332-77334
BVS	77280

Quick 3D

Simulation	77290 *(Pre-planning simulation)*
Planning	77295
MU	77300 x #
Shielding	77334 x #
BVS	77280
Boost Plan	*77315*
Boost MU	*77300 x #*
Boost MLC	*77334 x #*
Boost Sim	*77280-77290*

Quick IMRT

Simulation	77290 *(Pre-planning simulation)*
Planning	77301
MU	77300 x #
Shielding	77338 x 1
Isocenter Sim	77280
Boost Plan	*NO CHARGE*
Boost MU	*77300 x #*
Boost MLC	*77338 X 1*
Boost Sim	*NO CHARGE*

Questions

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CHURCHILL CONSULTING INC.

Thank you

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