



Healthcare Finance

The Role of the Medical Physicist in
Capital Projects and Project Management

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Disclosures / Conflicts of Interest

None

Overview

My background

What are capital projects?

Administrative versus physicist viewpoint

Proforma

How to build it correctly

What factors must be included?

What are their limitations

Project Management

Critical Path Method (CPM)

Role of the Physicist

Key Takeaways

Conclusions

My background

Chief of Medical Physics

Administrative Director

Responsible for

Oncology service line

Clinical research

Registry

Budgeting

Strategic Development

RSO

Occasional IT tech as well.....

Capital Projects

Large dollar items (Usually in excess of \$10,000)

Equipment replacement

New equipment

New service line

New facility

Can involve facility construction

Require administrative and possibly corporate approval

Are heavily scrutinized for costs / patient care benefits

Involve significant physics input and time

TrueBeam



Elekta



HDR unit



Administrative View

It's not about technology

Changing reimbursement is leading to a change in process for capital projects

Return on Investment (ROI) is critical

A good CFO is critical in the process

The old way of asking for equipment is not viable

It doesn't do what newer systems do

We can treat patients in half the time

The competitors have the latest accelerator

Administrative View

A team approach is crucial in the capital process

The physicist must be involved in the process

Is this a good idea? It can be but.....

You must make sure that you are included!

Earning the trust and respect of the administrative team is critical for a physicist

A proforma is the “gold standard”

It must be accurate

Do not and I mean do not let the vendor complete it!

Physicist View

Generally focused clinically and from a technical standpoint

Can have tunnel vision

True costs are not often considered

The global healthcare dollar and where radiation oncology sits in that process is often overlooked

Not always considered in the capital process

Proforma

What is a proforma?

Know the metrics

Factors that need to be accounted for:

- Reimbursement / bundled services

- Patient volume

- Negotiated rates

- Construction cost

- Staffing cost

Proforma

Service contract (huge hidden cost)
Physician backing (not quantifiable)
QA equipment costs (DO NOT FORGET!!)
Downtime if you are a single vault facility

SBRT Proforma

New SBRT program to be started

Assume 75 patients / yr

No new equipment needed

No additional QA equipment

How much revenue will be generated for the facility?

SBRT Proforma

CPT HCPCS Code	APC Code	Description	TOTAL QUANTITY PER PATIENT	APC Payment Rate	Possible Charge Rate
20555	50	Place needle into musc/tis for rt	0	\$2,601.11	\$3,720.00
41019	254	Place needles into head & neck for rt	0	\$1,945.43	\$3,040.00
55876	156	Place rt device/marker, pros	0	\$1,038.12	\$380.00
55920	153	Place needles into pelvic for rt	0	\$2,285.01	\$3,260.00
76000	272	Flouroscopy	0	\$159.47	\$175.00
77014	282	CT Guidance for Placement of RTX Fields	0	\$0.00	\$450.00
77280	304	Simple Simulation	1	\$113.12	\$300.00
77290	305	Complex Simulation	1	\$314.43	\$550.00
77293	NI	Respiratory motion 4-D	1	\$0.00	\$2,500.00
77295	310	3-D Simulation	1	\$1,038.12	\$5,500.00
77301	310	IMRT additional Planning	0	\$1,038.12	\$6,500.00
77300	304	Basic Dose Calculation	5	\$113.12	\$300.00
77307 old code 77315	305	Complex Isodose Plan	0	\$113.12	\$500.00
77321	305	Special Teletherapy Port Plan	0	\$314.43	\$450.00
77334	303	Complex Treatment Device	6	\$215.54	\$600.00
77338	303	Design mlc device for imrt	0	\$314.43	\$1,800.00
77331	304	Special Dosimetry	0	\$113.12	\$300.00
77336	304	Weekly Physics	1	\$113.12	\$300.00
77370	304	Special Physics Consult	1	\$113.12	\$390.00
77470	299	Special Treatment Procedure	1	\$507.55	\$1,000.00
77401	300	Simple Treatment Delivery	0	\$100.09	\$260.00
77412 old code 77413	301	Complex Treatment Delivery (6-10 MeV)	0	\$193.17	\$390.00
77417	260	Port Films	0	\$0.00	\$130.00
77372	67	SRS Linear Based	0	\$9,765.40	\$15,000.00
77373	66	SBRT Delivery	5	\$1,902.48	\$6,500.00
77385/77386 old code 77418	412	Radiotherapy/IMRT per session	0	\$507.55	\$960.00
G0463	634	Clinic Visit	2	\$96.22	\$300.00

SRS Proforma

New SRS program to be started

Assume 10 patients / yr

No new equipment needed

No additional QA equipment

How much revenue will be generated for the facility?

SRS Proforma

[illegible]

SRS Proforma

CPT HCPCS Code	APC Code	Description	TOTAL QUANTITY PER PATIENT	APC Payment Rate	Possible Charge Rate
77014	282	CT Guidance for Placement of RTX Fields (TC only) or 76355	0	\$0.00	\$450.00
77011	283	CT guidance for stereotactic localization	1	\$0.00	\$900.00
77280	304	Simple Simulation	1	\$104.48	\$300.00
77290	305	Complex Simulation	1	\$271.61	\$550.00
77295	310	3-D Simulation	1	\$926.74	\$5,500.00
77301	310	IMRT additional Planning	0	\$926.74	\$6,500.00
77300	304	Basic Dose Calculation	5	\$104.48	\$300.00
77315	305	Complex Isodose Plan	0	\$271.61	\$500.00
77321	305	Special Teletherapy Port Plan	0	\$271.61	\$450.00
77332	303	Simple Treatment Device	0	\$199.71	\$400.00
77333	303	Intermediate Treatment Device	0	\$199.71	\$500.00
77334	303	Complex Treatment Device	6	\$199.71	\$600.00
77338	303	Design mlc device for imrt	0	\$926.74	\$1,800.00
77331	304	Special Dosimetry	0	\$104.48	\$300.00
77336	304	Weekly Physics	1	\$104.48	\$300.00
77370	304	Special Physics Consult	1	\$104.48	\$390.00
77470	299	Special Treatment Procedure	1	\$388.58	\$1,000.00
77413	301	Complex Treatment Delivery (6-10 MeV)	0	\$160.54	\$390.00
77417	260	Port Films	0	\$0.00	\$130.00
G0251	65	Linear acc based stereo radio	0	\$977.12	\$4,500.00
G0173	67	SRS treatment code STD	0	\$3,408.69	\$6,500.00
G0339	67	Single session Image Guided Robotic	1	\$3,408.69	\$6,500.00
G0340	66	Multi session Image Guided Robotic	0	\$2,504.67	\$6,500.00
77418	412	Radiotherapy/IMRT per session	0	\$438.22	\$960.00
99204	606	Office/outpatient visit, New	1	\$128.48	\$200.00
77421	1502	KV-MV stereoscopic X ray guidance	0	\$0.00	\$150.00
99213	605	Office/outpatient visit, est	1	\$75.13	\$150.00

Upgrade Proforma

\$1.5 million dollar investment into existing accelerator

\$100,000 of vault renovations

Will allow for 30 SBRT and 5 SRS cases in year one

Assume a 10% volume increase year over year

QA equipment included in the investment

No additional staffing needed

How much revenue will be generated for the facility?

Upgrade Proforma

		Assumptions To Create a Dedicated Program
<u>Stereotactic Procedures:</u>		
	<u>Technical Reimbursement:</u>	
	SBRT Multi-fraction (5 fractions)	\$12,000
	SRS	\$10,900
<u>Initial Number of Patients Treated per year:</u>		
	SBRT Multi-fraction	30
	SRS	5
	% Increase per year	10%
<u>Variable Costs</u>		
	Disposables, drugs, etc	\$0
<u>Fixed Costs</u>		
	<u>Starting Salaries:</u>	
	Physicist	\$0
	Nurse (half time)	\$0
	Secretary	\$0
	Radiation Technologists	\$0
	Total Salaries	\$0
	Annual Salary Increase	4%
	Fringe Benefits	0.00
	<u>Facilities/Management:</u>	
	Utilities	\$0
	Insurance	\$0
	Marketing	\$0
	Service Contract	\$0
	Total Facilities/Management	\$0
<u>Capital Equipment</u>		
	Sale Price	\$1,500,000
	Facility Costs**	\$100,000
	Total Capital Equipment	\$1,600,000
	Depreciation Time for Unit (years)	7
	Depreciation Time for Bldg/Room (years)	0
	Salvage Value	\$0
	Salvage Value Equipment	\$0
	Average Tax Rate	0%
	Contractual Allowances	\$0
	Interest Rate	7.00%
	Loan Period for Equip&Bldg (years)	7
	Lease Payment - Vero (yearly)	\$0

Upgrade Proforma

UPGRADE PRO FORMA

Year	1	2	3	4	5
REVENUE:					
Number of Patients -SBRT	30	33	36	39	42
Number of Patients - SRS	5	6	6	7	7
Total Number of Patients	35	39	42	46	49
Revenue SBRT Treatments	360,000	396,000	432,000	468,000	504,000
Revenue SRS Treatments	54,500	59,950	65,945	72,540	79,793
Total Revenue	414,500	455,950	497,945	540,540	583,793
EXPENSES:					
Variable Costs	0	0	0	0	0
Salaries	0	0	0	0	0
Utilities, Insurance, Misc.	0	0	0	0	0
Marketing	0	0	0	0	0
Service Contract	0	0	0	0	0
Total Expenses	0	0	0	0	0
Operating Profit	414,500	455,950	497,945	540,540	583,793
Depreciation - Vero System	214,286	214,286	214,286	214,286	214,286
Depreciation - Facility	0	0	0	0	0
Total Depreciation	214,286	214,286	214,286	214,286	214,286
Net Profit	200,214	241,664	283,659	326,254	369,508

Cash Flow Analysis

Year	1	2	3	4	5
Operating Cash Flow	414,500	455,950	497,945	540,540	583,793
Investment (Facility + Equipment)	(1,600,000)				
Accumulated Cash Flow	(1,185,500)	(729,550)	(231,605)	308,935	892,728

Proforma Summary

Very effective at determining ROI

Require significant input in order to get accurate data

Can be easily skewed

Cannot accurately measure all aspects of a project:

- Physician support

- Reimbursement changes year over year

- Cost overruns

Project Management

Applicable in the field of medical physics

New center build

Equipment upgrade

Academics

Critical Path Method

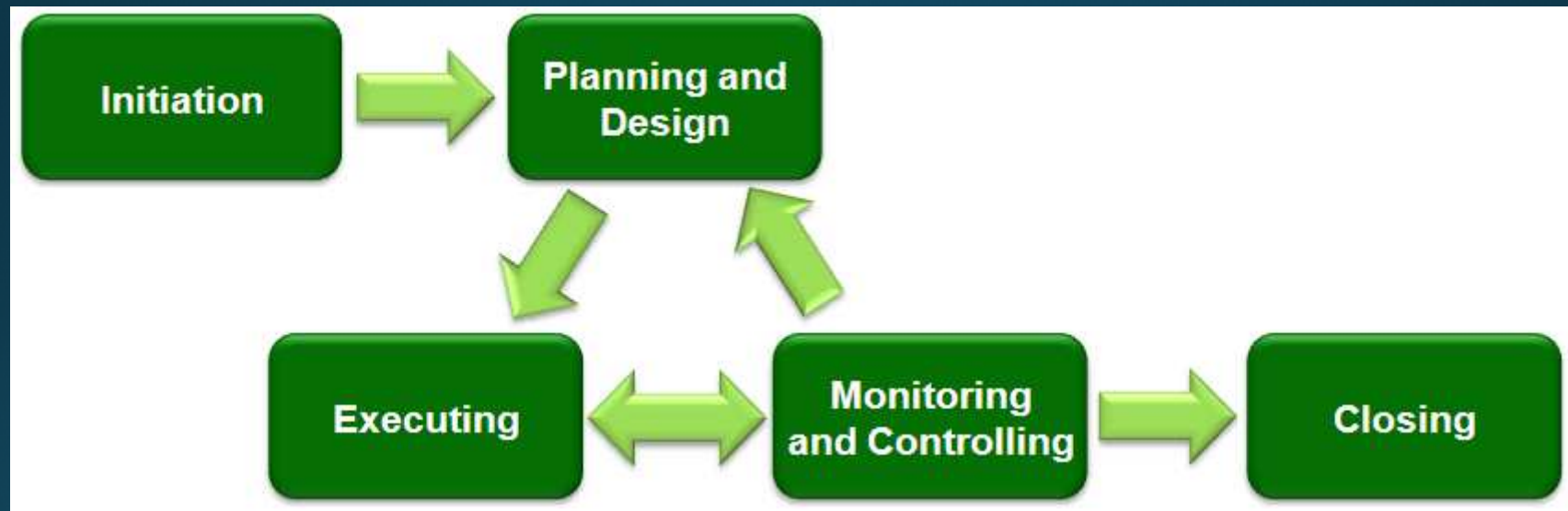
Common algorithm for projects

Developed in the 50s

Defined by the longest path of work to the end of
the project

Project Management

- Project Management Flow



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Critical Path Method

Four components of CPM

Milestones

Accelerator install / acceptance testing /
commissioning

Time to complete each activity

critical in timeline development
realistic timelines

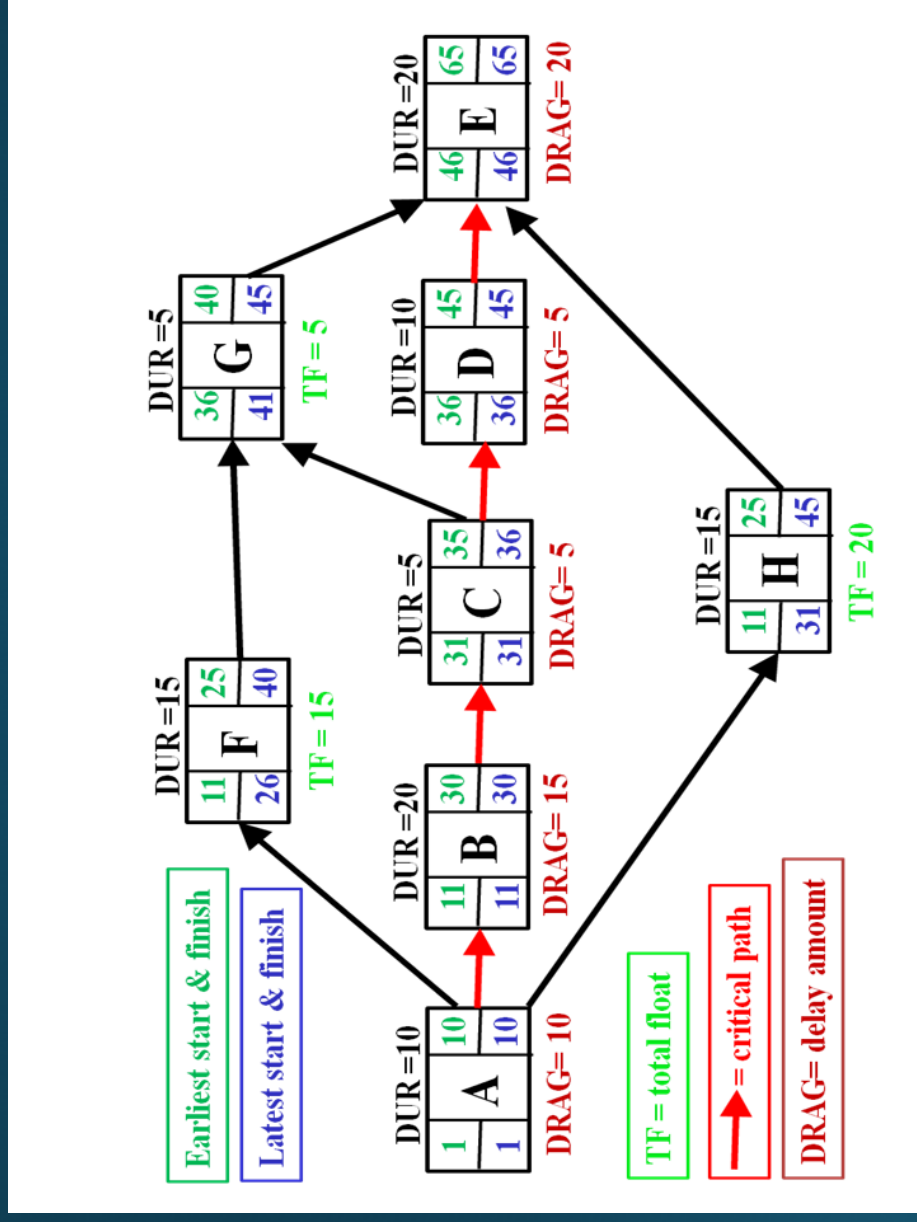
List of Activities

must be comprehensive

Interdependence of work activities

this accounts for delays that can cascade

Critical Path Method



The Role of the Medical Physicist

The role of a medical physicist in capital projects is wide ranging

Although the physicist won't be the PM, they need to know and understand the project and timeline

Initiation date

Hard timelines

Who are the key players

Where do they fit into the project

Expectations they must meet

Communication is key

Key Takeaways

Define Expectations

What is your role?

What are the deadlines?

What are potential roadblocks?

Do you have everything you need?

Expectations they must meet

Make sure you are comfortable with what is expected. It is ultimately your job and responsibility to be prepared!!

Conclusions

Capital projects come in many forms

They are complex in nature and require significant resources to accurately model

Administration takes a different viewpoint than the clinician

It is important to understand the administrative view but it is equally important for them to understand yours

ACCURATELY complete a proforma

Someone... Somewhere.... Sometime..... Will point out false numbers

Project management is complex but you need to know your role

Communication is key when dealing with capital expenditures and large projects

Conclusions

GET INVOLVED!!!

No matter how big or small, your contribution is
very valuable

Thank You

