



Financial Fundamentals: Advocating for your needs

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Disclosures

No conflicts

Medical Physics Professional Services: Cost / Value

Small Cancer Center wants to hire a recently boarded physicist at a base salary of \$150K.

What is the approximate annual cost of providing medical physics services?

\$150K? \$175K? \$200K? \$250K?

Estimating total cost of service

People

Base salary
Benefits
Continuing education
Recruitment/retention
Coverage

Equipment / validation

Instruments
Calibration services
Office equipment / QC software
Outside validation
Peer review

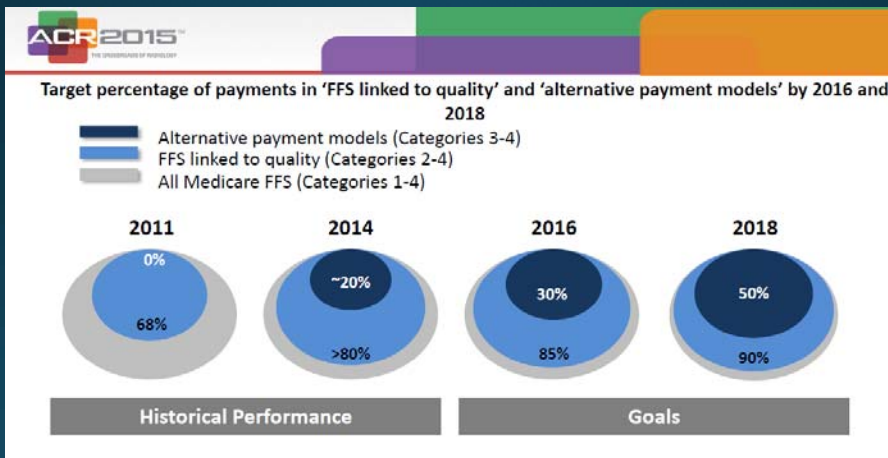
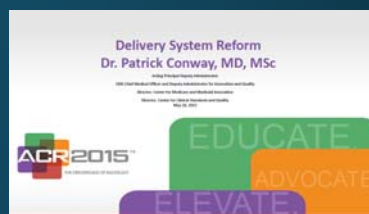
Estimating total cost of service

Base salary - \$150K	Instruments - \$16K (<i>\$250K over 15yrs</i>)
Benefits 28% = \$42K	Calibration services - \$5K
Continuing education - \$2.5K	Office equipment / QC software - \$5K
Recruitment/retention - \$10K	Outside validation - \$2K
<i>(avg over 5 yr term)</i>	Peer review - \$2.5K
Coverage - \$15K	
<i>(10 days / yr contracted)</i>	

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<i>(10 days / yr contracted)</i>	
	<u>TOTAL: \$250K</u>

Macro forces



The cost-reduction conversation

“What can be done to reduce cost?”

Turn the cost-reduction conversation into a VALUE conversation

→ The value conversation

Compensation & benefits are largely determined by market forces.

Reducing the investment in any components of the MP service's cost base would adversely affect the institution's ability to fully utilize its service line, by affecting the ability to:

Offer key clinical services

Accommodate referring physician / patient timelines

Provide the continuity needed for quality & safety

→ The value conversation

GAO
United States Government Accountability Office
 Report to Congressional Committees

May 2013

MEDICARE IMAGING ACCREDITATION

Establishing Minimum National Standards and an Oversight Framework Would Help Ensure Quality and Safety of Advanced Diagnostic Imaging Services

E. Proposed Work RVUs for Radiation Oncology Procedures for 2016

These values are subject to the 60-day comment period.

Table 11 (see pages 131-139)

CPT Code	Descriptor	Current Work	RUC Work	CMS Work	CMS Time Refinement
7778C	HDR brachytherapy, 1 channel, includes basic dosimetry	New	1.95	1.95	No
7778D	HDR brachytherapy, 2-12 channels, includes basic dosimetry	New	3.8	3.8	No
7778E	HDR brachytherapy, over 12 channels, includes basic dosimetry	New	5.4	5.4	No

Revised 2015 (CSC/BOC)*

ACR-ABS PRACTICE PARAMETER FOR THE PERFORMANCE OF RADIONUCLIDE-BASED HIGH-DOSE-RATE BRACHYTHERAPY

Radiation safety measures are mandatory for HDR procedures to ensure exposure is confined to the patient and that the source is properly delivered and returned to the radiation safe location within the afterloader. The radiation oncologist and the Qualified Medical Physicist must be in the immediate vicinity at all times while HDR brachytherapy is being administered. The patient must be continuously monitored by video or audio means during

Interpreting a P&L statement

	Actual	Forst	BtVt/Forst	% Var
Revenue				
MRI Revenue	0	0	0	0.0%
CT Revenue	0	0	0	0.0%
Nuclear (Open) Revenue	0	0	0	0.0%
RT Line Revenue	321,225	373,063	(51,843)	(13.9%)
RT CT Revenue	28,564	0	28,564	0.0%
SRB Revenue	0	0	0	0.0%
Biotechnology Revenue	0	0	0	0.0%
Ultrasound Revenue	0	0	0	0.0%
PEI Revenue	0	0	0	0.0%
Spot/Unscheduled Revenue	0	0	0	0.0%
Mammography Revenue	0	0	0	0.0%
X-Ray Revenue	0	0	0	0.0%
Other Revenue	1,687	1,687	1	0.0%
Gross Revenue	348,457	374,750	(26,293)	(7.0%)

Operating Profit	192,083	192,117	(34)	(0.0%)
%	55.0%	51.3%	0.1%	0.3%
Total SG&A	0	0	0	0.0%
Non-Recurring Expenses	0	0	0	0.0%
Overhead	34,305	0	(34,305)	0.0%
Shared Services	0	34,305	34,305	100.0%
EBITDA Adj	157,778	157,812	(34)	(0.0%)
%	45.0%	42.1%	3.0%	7.2%
Other Non-Recurring Expenses	0	0	0	0.0%
EBITDA	157,778	157,812	(34)	(0.0%)
EBITDA %	45.0%	42.1%	3.0%	7.2%
Internal Lease Expense	63,572	67,650	4,278	6.7%
Profit After Lease (PAL)	94,206	89,962	4,244	4.7%
PAL %	27.0%	24.0%	3.0%	12.5%

Site Level Expenses				
Payroll Expense	77,246	91,763	14,516	18.7%
PM Contracts	18,457	25,395	6,940	28.9%
Cybernet	0	0	0	0.0%
Repairs & Maintenance	0	2,500	2,500	100.0%
Equipment Rental	0	0	0	0.0%
Professional Services	(51,043)	47,936	(7,749)	(17.9%)
Employee Expenses	294	1,392	1,097	85.3%
T.L.E.	0	3,000	3,000	100.0%
Marketing	144	0	(144)	0.0%
Medical Supplies	1,571	2,871	1,300	47.4%
Insurance	360	360	0	0.0%
Licenses, Taxes & Fees	3,134	4,283	1,149	29.4%
Unit Office Expenses	3,880	2,362	(1,518)	(39.1%)
Other Unit Operating Expenses	85	500	415	69.4%
Management Contract Expenses	0	0	0	0.0%
Total Site Level Expenses	157,374	182,618	25,244	13.8%
Total Field Management	0	0	0	0.0%
Total Operating Expenses	157,374	182,618	25,244	13.8%
Operating Profit	192,083	192,117	(34)	(0.0%)
%	55.0%	51.3%	0.1%	0.3%

SG&A: Selling, General & Administrative → Operating Expense

EBITDA: Earnings Before Interest, Taxes, Depreciation & Amortization → Operating Performance

ILE: Cost of enabling services ("subsidy")

PAL: Profit After Lease → Net margin

Operational Expenses: Labor costs

Physicians Expenses		Jan 11	Feb 11	Mar 11
Vages	A5010	181,300	187,846	209,215
Overtime	A5015	57	-4	0
Bonus	A5027	14,146	13,053	14,429
Commissions	A5028	0	0	0
Holiday Pay	A5017	27,381	4,088	834
Payroll Taxes	A5018	30,774	15,722	16,559
Employee Benefits	A5020	0	28,259	24,940
Sick Pay	A5024	8,734	-81	705
Vacation Sick	A5025	13,047	11,571	12,645
Budget Payroll	A5009	0	0	0
Total Payroll		303,688	297,896	298,283
Outside Medical Svcs - Other	A5410	0	0	0
Liens Service	A5401	0	0	0
Outside Services - Medical	A5405	0	0	0
Outside Svcs - Physicians	A5406	70,850	23,400	80,444
Total Professional Services		374,538	321,296	378,727
Employee Meas - Local	A5607	111	172	185
Publication	A5608	3,982	0	0
Printing Fees	A5616	0	0	0
Dues and Subscriptions	A5620	515	1,859	0
Internet Access	A5621	186	187	242
Training/Seminar/Tuition	A5623	0	0	620
Total Employee Expenses		4,893	1,987	1,048
Airfare	A5700	0	1,309	670
Lodging	A5705	1,233	1,681	1,604
Meals-Employee	A5707	418	282	410
Fuel T.L.E.	A5708	40	107	32
Auto Rental	A5715	110	418	70
Shuttle/Fees	A5716	0	122	14
mileage/Reimbursement	A5725	3,468	4,067	5,085
Total Travel & Entertainment		5,284	8,947	7,795
Total Marketing Expenses		0	0	0
Total Insurance		0	0	0
Licenses, Certificates & Registration	A6200	0	0	112
Total Licenses, Taxes & Fees		0	0	112

Factor in avg costs for recruitment/retention, MOC, conferences, dues etc

Help director to achieve reasonably accurate budget forecasts translated into the required categories

Revenues

MEDICARE REIMBURSEMENT			PATIENT - IMRT		
CPT Code	DESCRIPTION	Reimbursement	Units		AMOUNT
			Free Units	Hosp Units	
77300	Basic Dosimetry	67.30	5.00	5.00	\$ 337
77301	3D Sim & Inverse Planning (IMRT)	1,889.63	1.00	1.00	\$ 1,890
77305	Simple Isodose Plan	61.76			\$ -
77310	Intermediate Isodose Plan	87.98			\$ -
77315	Complex Isodose Plan	136.54	0.10	0.10	\$ 14
77321	Port Plans	97.92	0.01	0.01	\$ 1
77331	Special Dosimetry-Diodes	61.09	0.50	0.50	\$ 31
77332	TX Device Simple	76.98			\$ -
77333	TX Device Intermediate	53.53			\$ -
77334	TX Device Complex	148.19	2.40	2.40	\$ 356
77336	Continuing Physics	46.94	5.00	5.00	\$ 235
77338	Design MLC device for IMRT	488.94	1.00	1.00	\$ 489
77370	Special Physics Consult	113.71	0.25	0.25	\$ 28

Understand the assumptions regarding revenue from each type of service – ask dept director for a briefing

Understand payor mix, local Medicare index and assumptions regarding “Medicare lift” for commercial payors.

→ “Blended rate”

Medicare - Revenue / Patient			\$ 23,842
Medicare - Revenue / Treatment			\$ 745
Treatments / Patient			32.00
Payor	Mix	Lift	
Medicare	40.0%	1.12	\$ 10,681
Commercial	60.0%	1.84	\$ 26,279
Medicaid	0.0%	1.00	\$ -
Blended - Revenue / Patient			\$ 36,960
Blended - Revenue / Treatment			\$ 1,155

Scenario A: New-grad hire

Hire a new-grad physicist to save money.

Impact: Very limited flexibility and capacity for supporting specialty procedures (HDR, SRS, SBRT) which require a boarded physicist. Limited ability to manage new-service projects. Higher contractor costs for supervision.

Scenario B: Consulting contract

Don't hire – contract with a consulting group instead.

Impact: Limited flexibility and capacity for supporting specialty procedures (HDR, SRS, SBRT) which require a boarded physicist. Reduced “ownership” and flexibility in supporting program growth. Less involvement in the management of the service line.

Scenario C: Delegate

Delegate much of the work since there are few regulatory requirements for board-certified physicists.

Impact: Limited flexibility and capacity for supporting specialty procedures (HDR, SRS, SBRT) which require a boarded physicist. Risk of misinterpreting key findings.

Scenario D: Cut equipment costs

Spend less on equipment and related services.

Impact: Inability to offer many modern services due to the lack of appropriate instrumentation and software to validate systems and implement appropriate quality management.

Proactively managing impressions

Demonstrate that you have considered options for cost-effective service delivery, and your recommended approach strikes the right balance for the institution.

Requires understanding of the institution's mission and priorities, realities of practice environment (e.g. how does physician staffing model impact the physics staffing model?), and opportunities/limitations in the local physics market.

FTEs based on practice pattern

Procedural Resource Allocation Tool									
Lahey Health Radiation Oncology									
Period Beginning	Thursday, October 01, 2015				Number of Days in Period		122		
Period End	Sunday, January 31, 2016								
	Radiation Oncologist	Other Specialty Physician	Radiation Physicist	Dosimetrist	Therapist	Nurse	Mammo Tech	Accelerator Engineer	Physicist Assistant
Total Hours for Period above	4074.8	178.5	3936.8	5199.3	12184.2	3965.2	44.4	696.0	139.2
Annual Hours Based on Period	12191.1	533.9	11778.3	15555.2	36452.7	11863.0	132.7	2082.3	416.5
FTE based on workload	5.9	0.3	5.7	7.5	17.5	5.7	0.1	1.0	0.2
Actual FTE	5.2	0.3	5.0	6.0	15.0	5.0	0.1	1.0	0.2

Summary

Understand the institution's mission and goals, the managers' perspectives, and the practice environment realities.

Then calmly and factually place the medical physics service investment in that context.

You're a partner in the institution's effort to provide excellent services while staying competitive - *not* a single-issue (job protection) negotiator.

AAPM 2017 Spring Clinical Meeting

Managerial / Healthcare Finance: Halvorsen

Exercise Outline:

Hospital management has hired a labor productivity analysis consulting firm. The firm has applied their standard, generic formula to assess labor productivity – computing the ratio of total “procedures” to paid staff time, sorted by cost center (department). Your Radiation Oncology department director is on the hot-seat, as the ratio is decidedly **not** in your department’s favor, and the physics service is by far the highest cost per FTE.

The department provides many specialty radiotherapy services (HDR, SRS, SBRT, IORT). The hospital’s mission is to be the region’s tertiary-care center serving the higher-acuity patient population. The hospital also provides physics oversight for two affiliated locations, through different staffing models – one center has a solo employed physicist with local-contractor coverage for vacations, the other center has an expensive “all options” consulting contract.

You’ve been tasked with reducing the cost of physics services by 10% in order to help the department reach its 10% cost reduction mandate.

Develop a compelling response to the administration’s challenge.

Managerial / healthcare finance exercise – cont.

Points to consider:

1. Regulatory requirements and accreditation standards related to supervision of specialty procedures
2. Current profile of physics staff (QMPs vs non-QMP, ?assistants)
3. Current staffing ratios compared to national benchmarks – is the institution clearly an outlier?
4. Impact on clinical services and revenue if QMP ratio is altered
5. Could Lean process improvements enable the current physics team to support a higher volume of specialty procedures (i.e. additional revenue)?
6. Would a consolidated physics staffing model (including satellites) reduce costs by eliminating per-diem outsourced coverage and redundant instrumentation expenses?
7. Other cost saving opportunities? (service contracts, consolidation of overlapping software systems, deferred capital projects etc)
8. VALUE

Assumptions:

- The clinic is not in a licensure state but is currently accredited by the ACR.
- 2 multi-purpose linacs at the main site, one with SRS capability; multi-channel HDR service with interstitial, intracavitary and skin-flap services; dedicated CT-sim; gating/breath hold capability. One linac and CT-sim at each satellite facility.
- Average external beam load 60 patients/day, 100 SRS-SBRT patients per year, 60 HDR patients per year at main site. Satellite 1 averages 25 patients/day and satellite 2 averages 30 patients/day – both have a “basic” scope of external-beam 3DCRT/IMRT services with no brachytherapy.
- Revenue per course of treatment: \$40K 3DCRT/IMRT blended, \$30K SRS-SBRT blended, \$15K HDR.
- Current staffing: 3.0 FTE at main site, all QMPs. One of the three is scheduled to retire in one year. Employed physicist at satellite is also a QMP. 3 CMD dosimetrists at main site, 1 CMD dosimetrist at “employed-model” satellite (with per diem contracted coverage for absences).
- Averaged staff base salaries: \$190K QMP, \$110K CMD.
- Same TPS and EMR environments at all locations, all from the same vendor, though not currently on shared database / licensing arrangement.
- One linac is 9 years old and a replacement is in the capital budget for next year. The other linac at the main site is 3 years old. Linacs at satellites are 4 and 8 years old. All are on OEM service contracts, but with separate contracts for each site.
- Annual service agreement costs: SRS linac (3 yrs old) \$250K, others \$185K each. TPS: \$200K main site, \$80K each satellite site. EMR: \$350K main site, \$150K each satellite site.

Back-of-the-napkin numbers:

REVENUE	Category	#/yr	\$/course	Subtotal
	EBRT main	600	\$40,000	\$24,000,000
	SRS-SBRT	100	\$30,000	\$3,000,000
	HDR	60	\$15,000	\$900,000
	EBRT sat1	250	\$40,000	\$10,000,000
	EBRT sat2	300	\$40,000	\$12,000,000
			TOTAL:	\$49,900,000

So the combined service produces roughly \$50M in annual gross revenue. Even a modest 3% growth in the service would mean an additional \$1.5M in gross revenue. The corollary is also true – cost reductions that negatively impact capacity or referrals could result in revenue reductions of a similar scale.

COSTS	Category	#	unit \$	Subtotal
	QMP base sal	4	\$190,000	\$760,000
	CMD base sal	4	\$110,000	\$440,000
	Benefits/vacation coverage			\$780,000
	Consulting (sat2)	1	\$475,000	\$475,000
	Service contracts	1	\$1,800,000	\$1,800,000
			TOTAL:	\$4,255,000

So a 10% cost reduction means approximately \$425K annually. Separate service contracts at all three sites, and redundant databases, are a natural opportunity for cost-base reductions without any appreciable loss in clinical service capacity. If the systems are better integrated, and the staffing model is consistent, could additional savings be realized by managing vacation/absence coverage internally between the three sites? How would that impact the clinical service capacity?