

Radiation Therapy, Management and Dosimetry Workplace Survey 2010

A Nationwide Survey Conducted by the American Society of Radiologic Technologists
With Support from Varian Medical Systems

November 2010

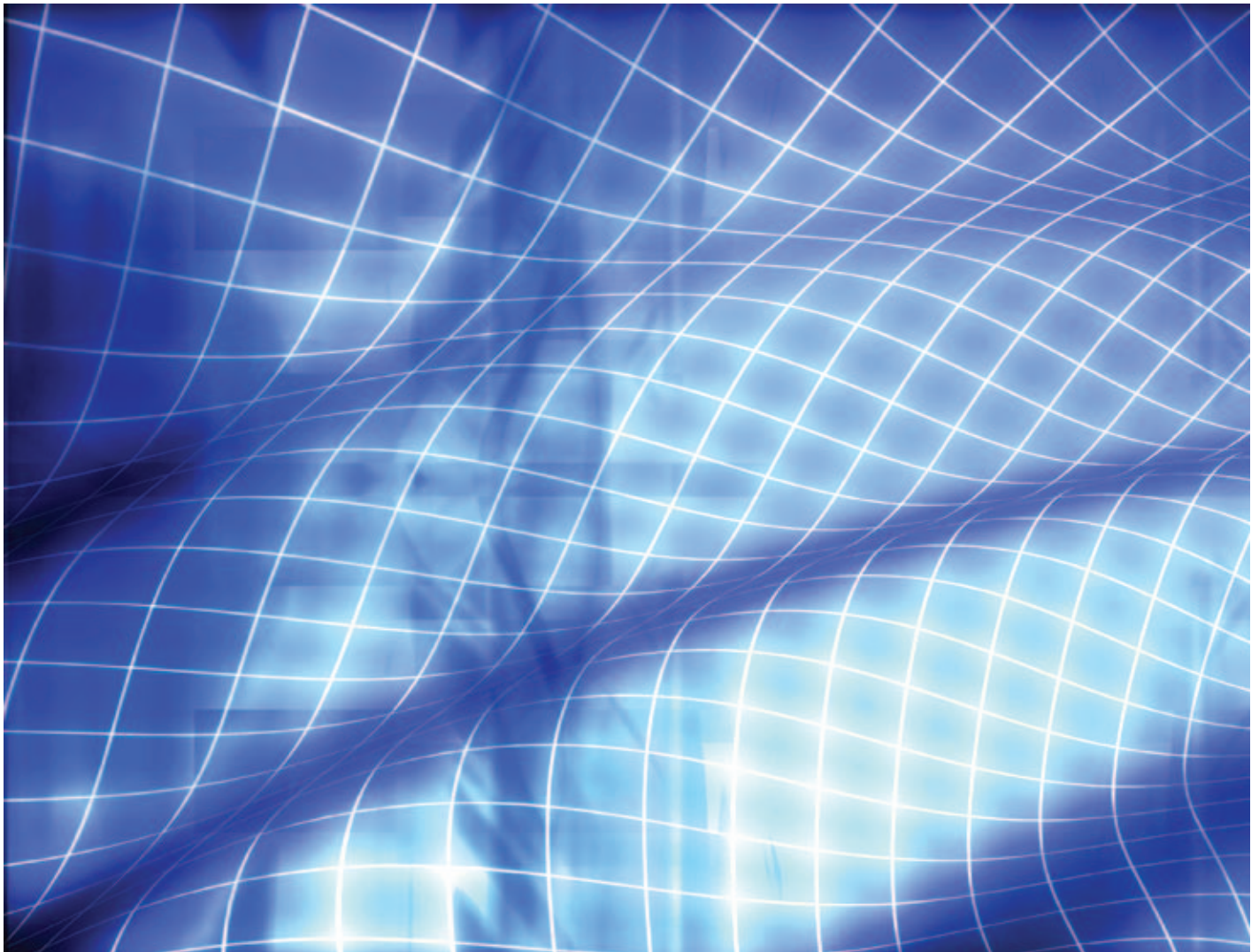


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Executive Summary

In July 2010 an invitation to participate in one of three workplace surveys was sent via e-mail to 14,405 radiation therapists, dosimetrists and radiation therapist managers. At the close of the survey on August 27, 2010, a total of 3,355 responses had been received from 2,429 radiation therapists, 567 dosimetrists and 359 managers, yielding an overall response rate of 23.3%.

	Return	Estimated Population	Percent Sampled	Margin of Error at the 95% Level
Radiation Therapists	2,429	18,762	12.9%	±1.9%
Dosimetrists	567	2,763	20.5%	±3.7%
Facility Managers	359	2,613	13.7%	±4.8%
Overall	3,355	24,138	13.9%	±1.6%

Demographics

- The mean age of all respondents was 42.7 years.
- Respondents on average have worked for 13.2 years in their specialty.
- Slightly more than 32% of respondents graduated from a radiography plus 1-year certification program; 25.3% graduated from an associate degree program and 22.8% from a bachelor's degree program.
- About 84% of the medical dosimetrists who participated in the survey indicated that they were certified in the specialty, and 99.5% of the radiation therapists indicated that they were certified in radiation therapy. Similarly for managers, 96% indicated that they were certified in radiation therapy.
- Approximately 54% of radiation therapists, 62% of dosimetrists and 60% of managers indicated that they were also certified in radiography.
- About a third (33.7%) of therapists and dosimetrists indicated that they supervise others who perform treatments, with a significantly higher percentage of therapists supervising than dosimetrists, and doing so for more years.
- Respondents indicated that their facility has on average:
 - 59 patients daily.
 - 2.33 linear accelerators.
 - 25.8 patients per day, per linear accelerator.
 - 2.32 therapists scheduled per linear accelerator.
 - 1.24 dosimetrists scheduled per linear accelerator.
 - 1.73 hours where there is only one therapist per linear accelerator.
 - 2.75 dosimetrists employed at their facility.
- Most (80.4%) facilities have a physicist on site daily.
 - Facilities with on-site physicists employ on average 2.96 physicists, and those facilities that do not have full-time on-site physicists have a physicist an average of 13.95 hours per week.

Facility Demographics and Staffing

- The top three services provided by facilities were intensity modulated radiation therapy, or IMRT (96.1%), computed tomography/simulation (93.7%), and conformal radiation therapy delivery (90.7%).
- Most (69.6%) respondents rated that their facility is "appropriately staffed."
 - When broken down by position, 29% of therapists indicated that their facility was "understaffed," which was significantly higher than managers and dosimetrists.
 - Of those respondents who indicated being "understaffed," 45.9% cited that the number of budgeted full-time employees is too low for the department's workload.

Clinical Skills

- When provided the appropriate supervision, therapists and dosimetrists feel that they can perform on average 95.6% of the procedures offered in their departments.
 - Procedures highlighted as difficult by respondents included simulations (50.4%), HDR (17.9%) and Brachetherapy brachytherapy (15.8%).
- When asked specific questions concerning the skills of recent graduates, managers indicated that:
 - New graduates can perform an average 84.7% of the procedures offered in their departments when provided with the appropriate supervision.

- For those who cannot perform the procedures, 15.3% attribute this to educational programs, 12.9% to individual characteristics and more than a fourth (28.5%) to both equally.
- Eighty percent were fully satisfied with new graduates' skills.
- A difference in skills exists between graduates from different types of programs (66.4%) .
- Compared with therapists 3 to 5 years ago, new graduates' skills are not equivalent (60.4%).
- One-third (33.4%) indicated that it has had "very little impact" on the number of patients, and 31.6% indicated it has "somewhat increased." Therapists rated the impact significantly higher than did dosimetrists, who rated the impact significantly higher than did managers.
- Most (88.4%) indicated that technological developments have had at least "somewhat increased" to "greatly increased" the quality of care.
- Verbatim responses indicated that respondents believe technology has affected the increase in accuracy of treatments (21.3%), the increase in complexity and time of their job (23.0%) and added stress (17.2%).

Daily Practices

- Three-fourths (74.8%) of therapists indicated that their facility requires that IMRT/volumetric modulated arc therapy have a plan-specific quality assurance procedure performed before the first day of treatment.
 - Most (94.8%) of the respondents indicated that a physicist performs this check, and 10.7% indicated that dosimetrists do so.
- Nearly 16% of respondents indicated that their facility uses remote planning.
- Approximately 60.4% of facilities use photo verification as a method of patient verification; 55.4% use verbal confirmation and 22.7% use wrist bands or ID cards.
- Slightly more than 84% of dosimetrists indicated that their facility's policy requires a second check on 2-D and 3-D treatment plans before the first day of treatment.
 - Of those who require a second check, 75.9% indicated that it is performed by a physicist.
- Respondents indicated that their facility:
 - Uses the following imaging protocols: all fields before or on day one (52.3%), weekly MV imaging (44.3%) and cone-beam CT (32.6%).
 - Requires treatment parameters to be manually verified:
 - On the first day of treatment (80.1%).
 - Following any plan modifications (55.9%).
 - Daily before treating (31.9%).
 - Weekly (12.8%).
 - Never (3.4%).
- Has as the primary distraction people interrupting during treatments (25.4%).
- Tracks errors (86.2%).
- Respondents indicated that:
 - They are eager to learn new technology (51.5%).
 - They feel prepared when implementing new technology (85.1%), with a significantly higher percentage of therapists and managers believing so than dosimetrists.
 - The equipment they work with is at least "somewhat intuitive" to "very intuitive" (76.7%).

Technological Impacts

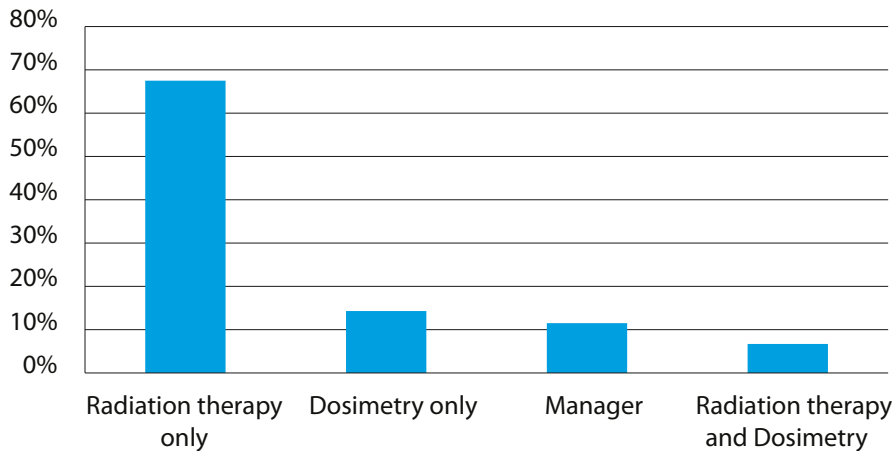
- When asked how technology has impacted the number of patients seen in a week and quality of treatments:

Demographics

Primary area of work

	Frequency	Percent	Valid Percent
Radiation therapy only	2032	60.6	67.5
Dosimetry only	432	12.9	14.3
Manager	346	10.3	11.5
Radiation therapy and Dosimetry	202	6.0	6.7
Total	3012	89.8	100.0
Not working	343	10.2	
Total	3355	100.0	

Primary area of work



State:

State	N
AK	8
AL	30
AR	16
AZ	69
CA	242
CO	45
CT	53
DE	11
FL	197
GA	67

State	N
HI	10
IA	24
ID	24
IL	120
IN	99
KS	25
KY	35
LA	44
MA	92
MD/DC	62

State	N
ME	16
MI	94
MN	64
MO	64
MS	20
MT	11
NC	94
ND	9
NE	33
NH	14

State	N
NJ	80
NM	23
NV	27
NY	168
OH	108
OK	50
OR	43
PA	149
RI	8
SC	42

State	N
SD	13
TN	69
TX	157
UT	16
VA	62
VT	12
WA	91
WI	71
WV	13
WY	4

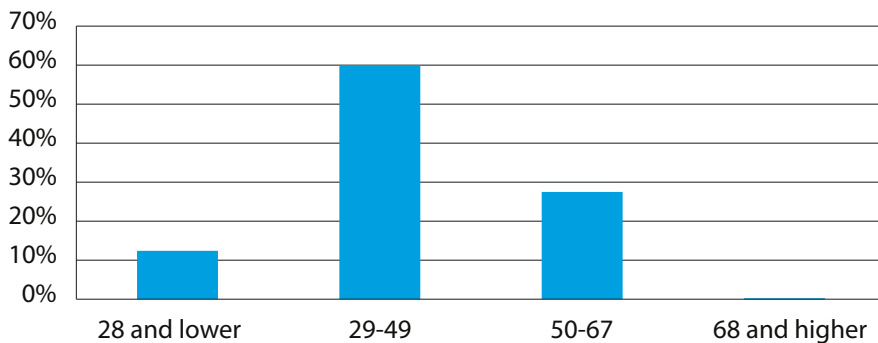
Other geographical areas represented:

Area	N
Australia	1
Canada	37
New Zealand	1
Switzerland	1
Virgin Islands	1

Age

	Frequency	Percent	Valid Percent	Cumulative Percent
28 and lower	367	10.9%	12.4%	12.4%
29-49	1771	52.8%	60.0%	72.4%
50-67	812	24.2%	27.5%	99.9%
68 and higher	2	0.1%	0.1%	100.0%
Total	2952	88.0%	100.0%	
Missing	403	12.0%		
Total	3355	100.0%		
Mean Age Percentiles	42.7 (SD=10.30) 5th=25.8, 25th=34.2, 50th=43.1, 75th=51.0, 95th=58.7			

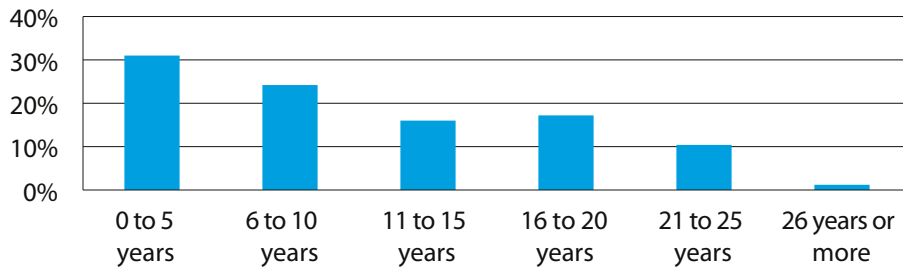
Age



How long have you worked in your discipline?

	Frequency	Percent	Valid Percent	Cumulative Percent
0 to 5 years	819	24.4	31.0	31.0
6 to 10 years	640	19.1	24.2	55.2
11 to 15 years	423	12.6	16.0	71.2
16 to 20 years	456	13.6	17.2	88.4
21 to 25 years	275	8.2	10.4	98.8
26 years or more	32	1.0	1.2	100.0
Total	2645	78.8	100.0	
Missing	710	21.2		
Total	3355	100.0		
Mean years worked	13.20 (SD=9.46)			
Percentiles	5th=1.6, 25th=5.0, 50th=10.9, 75th=19.8, 95th=30.8			

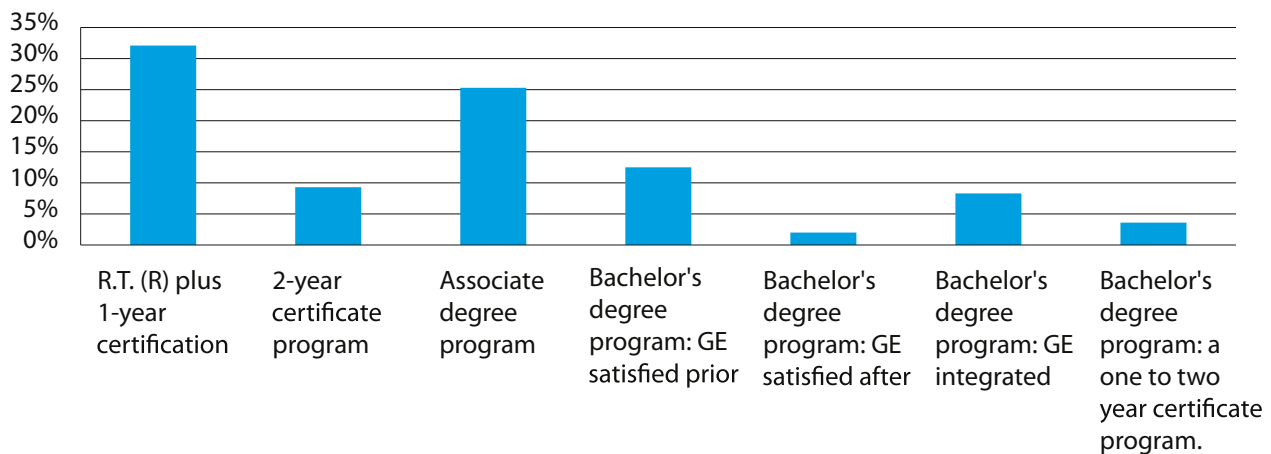
How long have you worked in your discipline?



From what type of educational program did you graduate to qualify for the registry exam?

	Frequency	Percent	Valid Percent
R.T. (R) plus 1-year certification	852	25.4	32.1
2-year certificate program	247	7.4	9.3
Associate degree program	672	20.0	25.3
Bachelor's degree program, with general education satisfied prior to beginning didactic and clinical work.	332	9.9	12.5
Bachelor's degree program, with general education satisfied after didactic and clinical work were completed.	52	1.5	2.0
Bachelor's degree program, with general education integrated with didactic and clinical work.	219	6.5	8.3
Bachelor's degree program, followed by a one to two year therapy/dosimetry certificate program.	95	2.8	3.6
Other (please specify below)	183	5.5	6.9
Total	2652	79.0	100.0
Missing	703	21.0	
Total	3355	100.0	

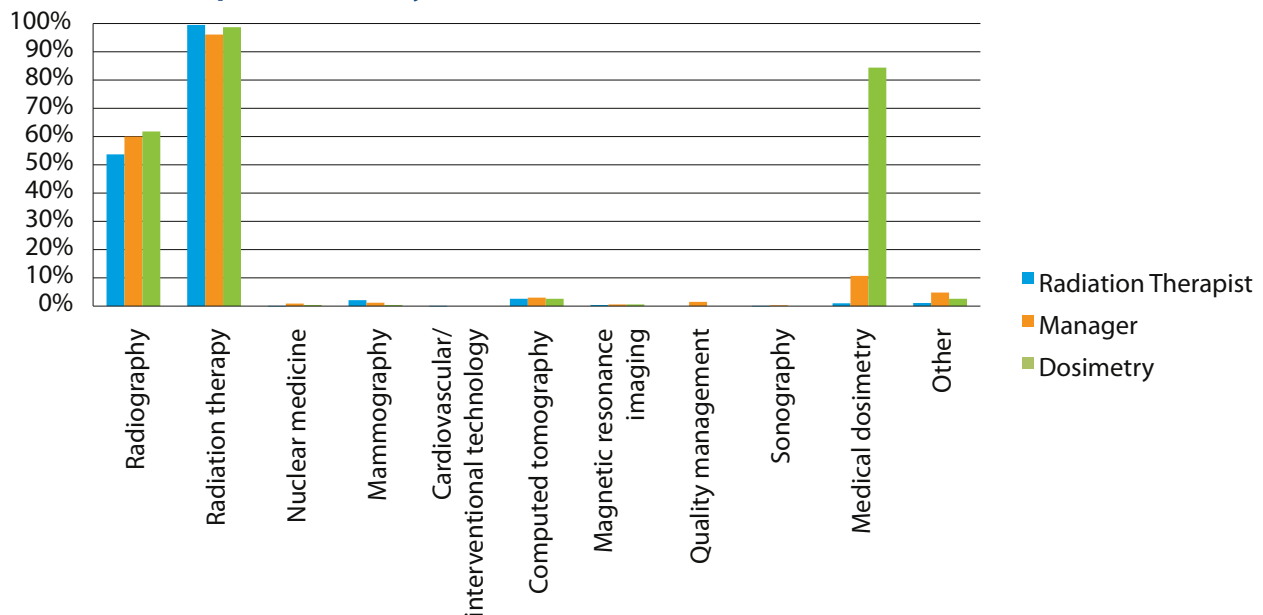
From what type of educational program did you graduate to qualify for the registry exam?



Check all of the disciplines in which you are certified:

		Radiation Therapist	Manager	Dosimetrist
Radiography	Count	1134	201	337
	%	53.7%	60.0%	61.8%
Radiation therapy	Count	2102	322	538
	%	99.5%	96.1%	98.7%
Nuclear medicine	Count	2	3	2
	%	0.1%	0.9%	0.4%
Mammography	Count	44	4	2
	%	2.1%	1.2%	0.4%
Cardiovascular/interventional technology	Count	3	0	0
	%	0.1%	0.0%	0.0%
Computed tomography	Count	55	10	14
	%	2.6%	3.0%	2.6%
Magnetic resonance imaging	Count	9	2	3
	%	0.4%	0.6%	0.6%
Quality management	Count	1	5	0
	%	0.0%	1.5%	0.0%
Sonography	Count	2	1	0
	%	0.1%	0.3%	0.0%
Medical dosimetry	Count	21	36	460
	%	1.0%	10.7%	84.4%
Other	Count	24	16	14
	%	1.1%	4.8%	2.6%
Total	Count	2113	335	545

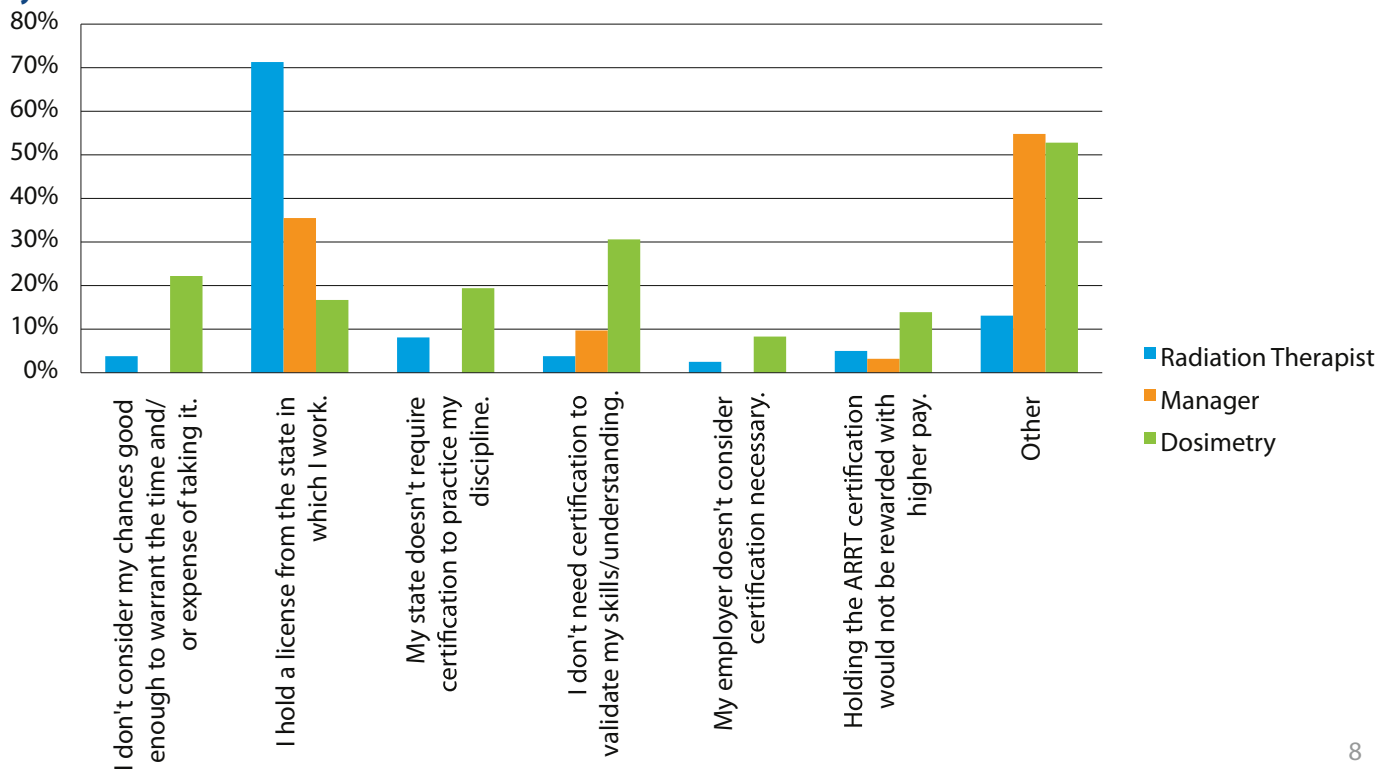
Check all of the disciplines in which you are certified:



If you are not certified in your discipline, and you do not plan to take the certification exam in the future, why not?

		Radiation Therapist	Manager	Dosimetrist
I don't consider my chances good enough to warrant the time and/or expense of taking it.	Count	6	0	8
	%	3.8%	0.0%	22.2%
I hold a license from the state in which I work.	Count	114	11	6
	%	71.3%	35.5%	16.7%
My state doesn't require certification to practice my discipline.	Count	13	0	7
	%	8.1%	0.0%	19.4%
I don't need certification to validate my skills/understanding.	Count	6	3	11
	%	3.8%	9.7%	30.6%
My employer doesn't consider certification necessary.	Count	4	0	3
	%	2.5%	0.0%	8.3%
Holding the ARRT certification would not be rewarded with higher pay.	Count	8	1	5
	%	5.0%	3.2%	13.9%
Other	Count	21	17	19
	%	13.1%	54.8%	52.8%
Total	Count	160	31	36

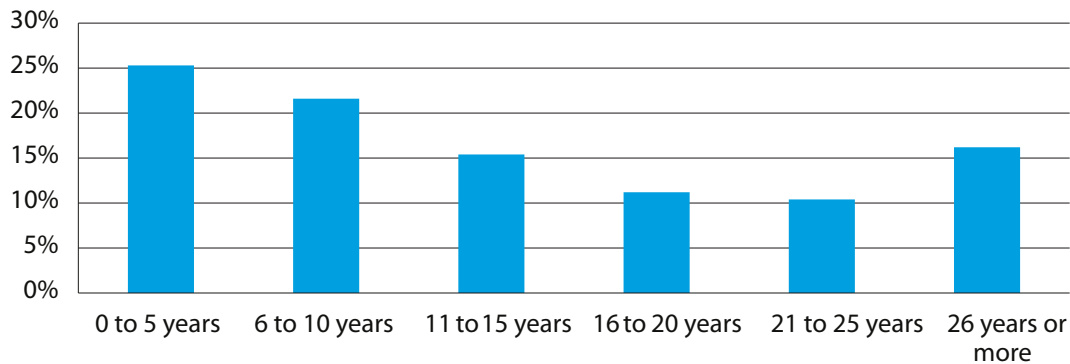
If you are not certified in your discipline, and you do not plan to take the certification exam in the future, why not?



If you are no longer working in the profession, how many years did you work in your discipline?

	Frequency	Percent	Valid Percent	Cumulative Percent
0 to 5 years	61	1.8	25.3	25.3
6 to 10 years	52	1.5	21.6	46.9
11 to 15 years	37	1.1	15.4	62.2
16 to 20 years	27	0.8	11.2	73.4
21 to 25 years	25	0.7	10.4	83.8
26 years or more	39	1.2	16.2	100.0
Total	241	7.2	100.0	
Missing	3114	92.8		
Total	3355	100.0		
Mean years worked	14.60 (SD=10.67)			
Percentiles	5th=1.5, 25th=5.5, 50th=12.0, 75th=22.6, 95th=37.2			

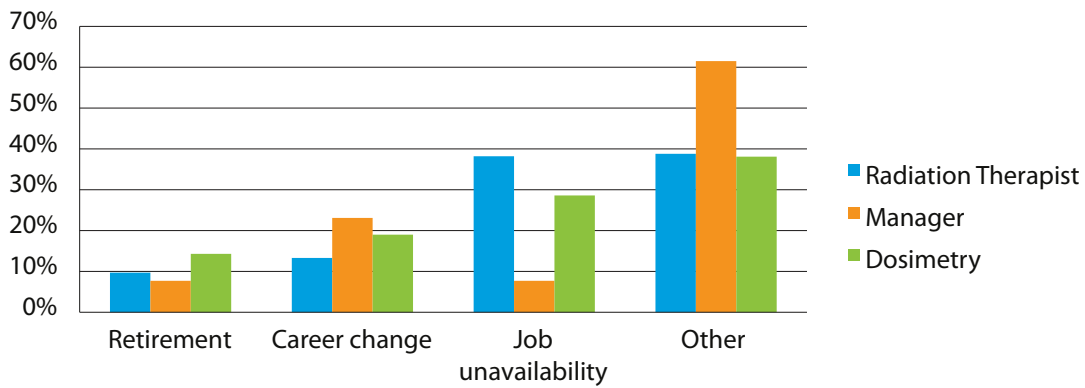
If you are no longer working in the profession, how many years did you work in your discipline?



Choose the primary reason why you are unemployed or employed outside of radiation therapy.

		Radiation Therapist	Manager	Dosimetrist	Total
Retirement	Count	30	1	3	34
	%	9.7%	7.7%	14.3%	9.9%
Career change	Count	41	3	4	48
	%	13.3%	23.1%	19.0%	14.0%
Job unavailability	Count	118	1	6	125
	%	38.2%	7.7%	28.6%	36.4%
Other	Count	120	8	8	136
	%	38.8%	61.5%	38.1%	39.7%
Total	Count	309	13	21	343

Choose the primary reason why you are unemployed or employed outside of radiation therapy.

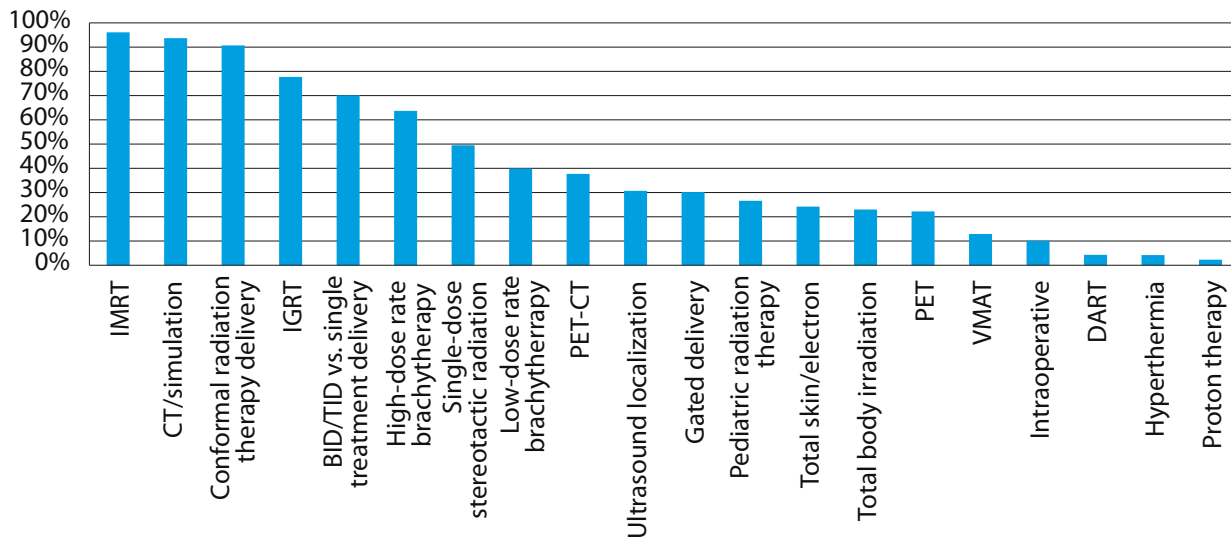


Facility Demographics and Staffing

Which of the following services does your facility provide?

	N	Percent	Percent of Respondents
Intensity-modulated radiation therapy (IMRT)	2870	11.9	96.0
CT/simulation	2798	11.6	93.7
Conformal radiation therapy delivery	2708	11.2	90.7
Image-guided radiation therapy (IGRT)	2321	9.6	77.7
BID/TID vs. single treatment delivery	2094	8.7	70.1
High-dose rate brachytherapy	1903	7.9	63.7
Single-dose stereotactic radiation therapy	1477	6.1	49.5
Low-dose rate brachytherapy	1191	4.9	39.9
PET-CT	1127	4.7	37.7
Ultrasound localization	917	3.8	30.7
Gated delivery	903	3.7	30.2
Pediatric radiation therapy	793	3.3	26.6
Total skin/electron	722	3.0	24.2
Total body irradiation	687	2.8	23.0
PET	663	2.7	22.2
Volumetric modulated arc therapy (VMAT)	386	1.6	12.9
Intraoperative	302	1.2	10.1
Dynamic adaptive radiation therapy (DART)	128	0.5	4.3
Hyperthermia	124	0.5	4.2
Proton therapy	68	0.3	2.3

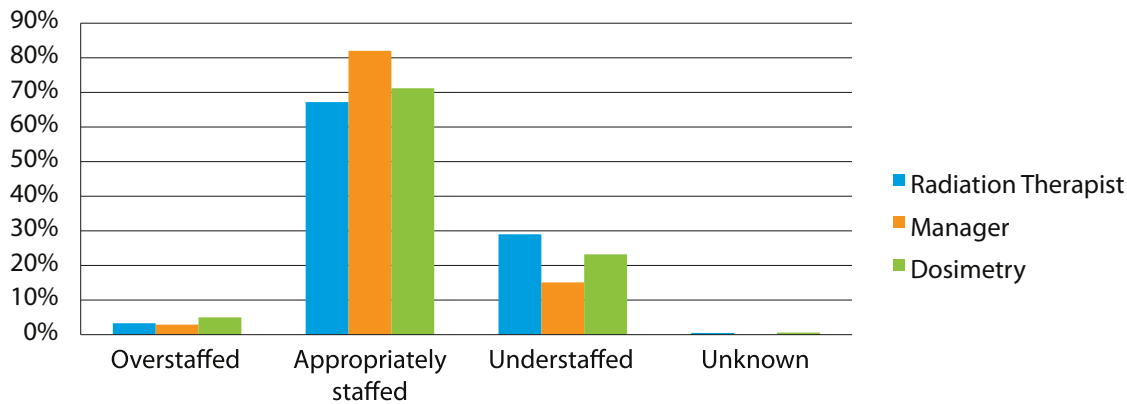
Which of the following services does your facility provide?



In terms of staffing levels, how would you describe your facility?

		Radiation Therapist	Manager	Dosimetrist	Total
Overstaffed=1	Count	70	10	27	107
	%	3.3%	2.9%	5.0%	3.6%
Appropriately staffed=0	Count	1416	282	386	2084
	%	67.2%	82.0%	71.2%	69.6%
Understaffed=-1	Count	612	52	126	790
	%	29.0%	15.1%	23.2%	26.4%
Unknown	Count	10	0	3	13
	%	0.5%	0.0%	0.6%	0.4%
Total	Count	2108	344	542	2994
	%	100.0%	100.0%	100.0%	100.0%
Mean rating (1, 0, -1)		-0.26	-0.12	-0.18	-0.23
Significant differences among groups	T<M, D (P <.001, =.006)				

In terms of staffing levels, how would you describe your facility?

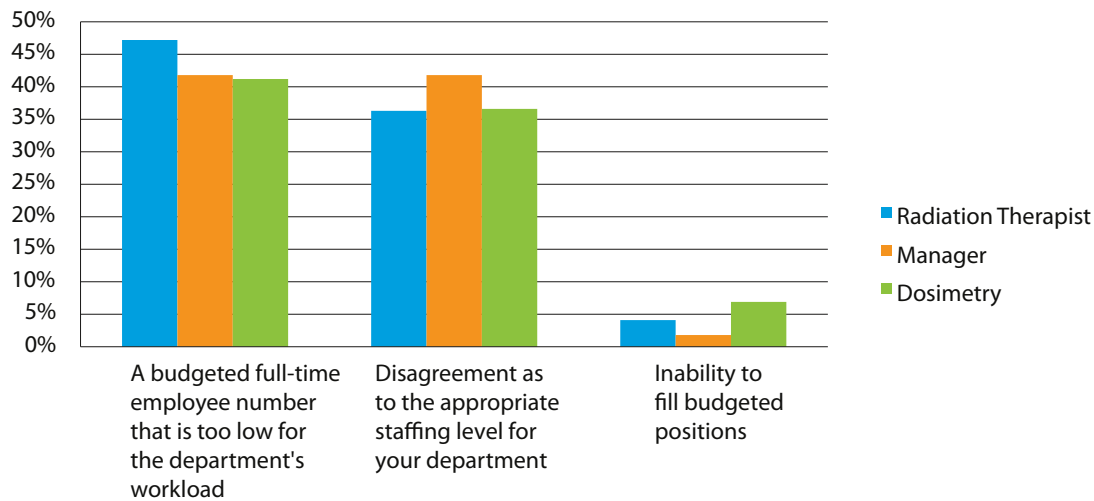


If “understaffed,” choose the primary reason why you believe this is the case.

		Radiation Therapist	Manager	Dosimetrist	Total
A budgeted full-time employee number that is too low for the department’s workload	Count	300	23	54	377
	%	47.2%	41.8%	41.2%	45.9%
Disagreement as to the appropriate staffing level for your department	Count	231	23	48	302
	%	36.3%	41.8%	36.6%	36.7%
Inability to fill budgeted positions	Count	26	1	9	36
	%	4.1%	1.8%	6.9%	4.4%
Other	Count	79	8	20	107
	%	12.4%	14.5%	15.3%	13.0%
Total	Count	636	55	131	822
	%	100.0%	100.0%	100.0%	100.0%

There were no statistically significant differences in the response patterns among the three groups.

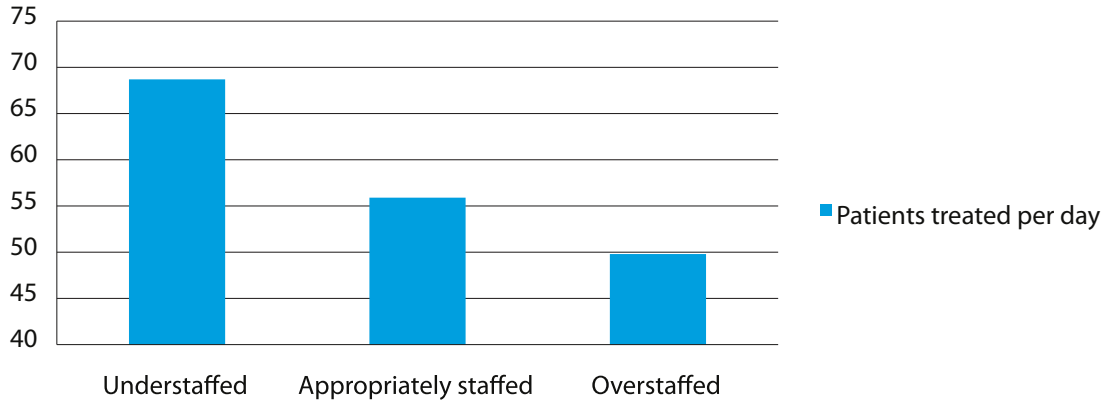
If “understaffed,” choose the primary reason why you believe this is the case.



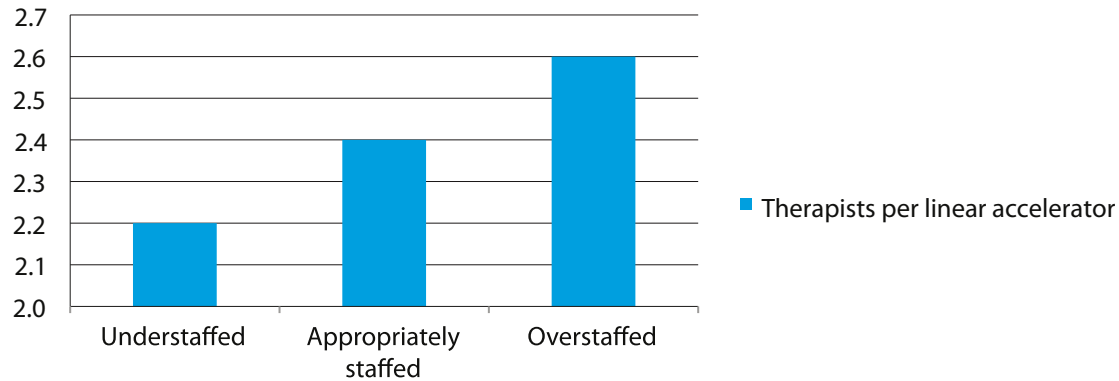
Mean patients treated per day and mean therapists per linear accelerator by staffing level

	Understaffed	Appropriately staffed	Overstaffed	Significance testing
Patients treated per day	68.7	55.9	49.8	U>A & O ($P < .001$)
Therapists per linear accelerator	2.2	2.4	2.6	O>A>U ($P < .001$)

Mean patients treated per day by staffing level



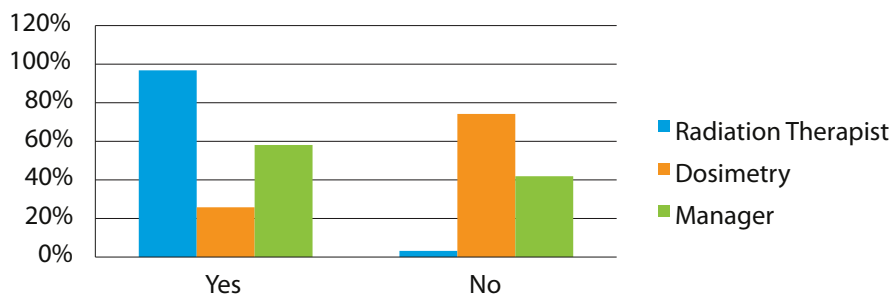
Mean patients treated per linear accelerator by staffing level



Do you perform treatments as a part of your professional duties?

		Radiation Therapist	Manager	Dosimetrist	Total
Yes	Count	2034	198	139	2371
	%	96.8%	58.1%	25.8%	79.6%
No	Count	67	143	399	609
	%	3.2%	41.9%	74.2%	20.4%
Total	Count	2101	341	538	2980
	%	100.0%	100.0%	100.0%	100.0%
Significant differences among groups		T>M>D ($P < .001$)			

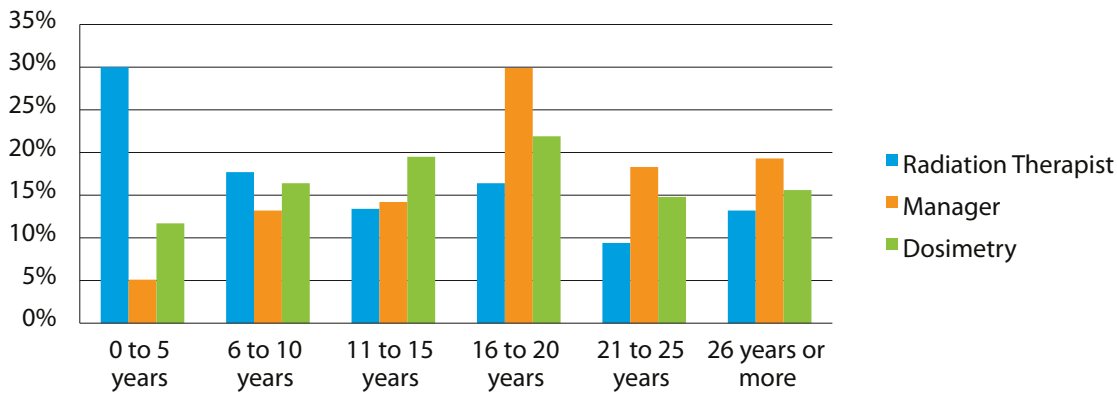
Do you perform treatments as a part of your professional duties?



If you perform treatments as a part of your professional duties, for how many years?

		Radiation Therapist	Manager	Dosimetrist	Total
0 to 5 years	Count	557	10	15	582
	%	30.0%	5.1%	11.7%	26.7%
6 to 10 years	Count	328	26	21	375
	%	17.7%	13.2%	16.4%	17.2%
11 to 15 years	Count	249	28	25	302
	%	13.4%	14.2	19.5%	13.8%
16 to 20 years	Count	304	59	28	391
	%	16.4%	29.9%	21.9%	17.9%
21 to 25 years	Count	175	36	19	230
	%	9.4%	18.3%	14.8%	10.5%
26 years or more	Count	245	38	20	303
	%	13.2%	19.3%	15.6%	13.9%
Total	Count	1858	197	128	2183
	%	100.0%	100.0%	100.0%	100.0%
Mean years		13.33	18.72	16.59	14.01
Significant differences among groups		M,D>T (P <.001)			

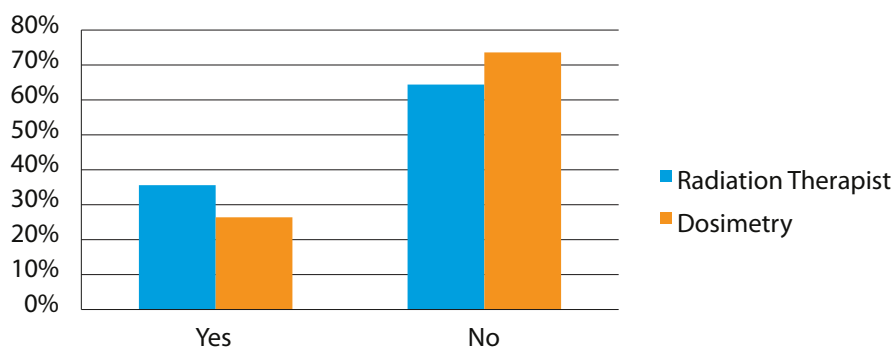
If you perform treatments as a part of your professional duties, for how many years?



Do you supervise those who perform treatments?

		Radiation Therapist	Dosimetrist	Total
Yes	Count	741	140	881
	%	35.6	26.4	33.7
No	Count	1342	391	1733
	%	64.4	73.6	66.3
Total	Count	2083	531	2614
	%	100.0	100.0	100.0
Significant differences among groups		T>D ($P < .001$)		

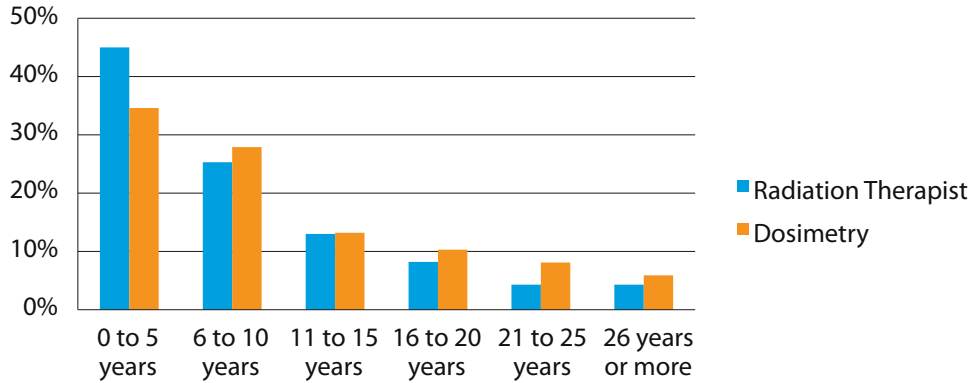
Do you supervise those who perform treatments?



If you supervise those who perform treatments, for how many years?

		Radiation Therapist	Dosimetrist	Total
0 to 5 years	Count	325	47	372
	%	45.0%	34.6%	43.3%
6 to 10 years	Count	183	38	221
	%	25.3%	27.9%	25.7%
11 to 15 years	Count	94	18	112
	%	13.0%	13.2%	13.0%
16 to 20 years	Count	59	14	73
	%	8.2%	10.3%	8.5%
21 to 25 years	Count	31	11	42
	%	4.3%	8.1%	4.9%
26 years or more	Count	31	8	39
	%	4.3%	5.9%	4.5%
Total	Count	723	136	859
	%	100.0%	100.0%	100.0%
Mean years		9.1	8.2	9.4
Significant differences among groups		T>D (P =.003)		

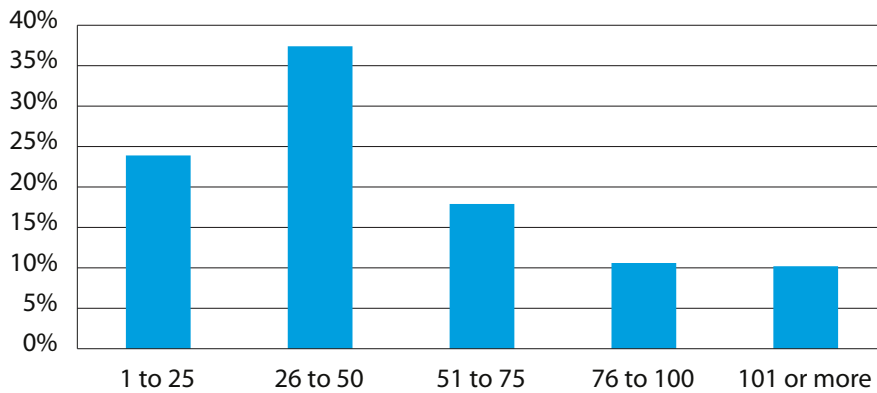
If you supervise those who perform treatments, for how many years?



Approximately how many patients are treated daily at your facility?

	Frequency	Percent	Valid Percent	Cumulative Percent
1 to 25	700	20.9	23.9	23.9
26 to 50	1096	32.7	37.4	61.3
51 to 75	525	15.6	17.9	79.2
76 to 100	311	9.3	10.6	89.8
101 or more	300	8.9	10.2	100.0
Total	2932	87.4	100.0	
Missing	423	12.6		
Total	3355	100.0		
Mean number of patients Percentiles	58.96 (SD=60.11) 5th=15.1, 25th=27.9, 50th=43.9, 75th=69.8, 95th=146.1			

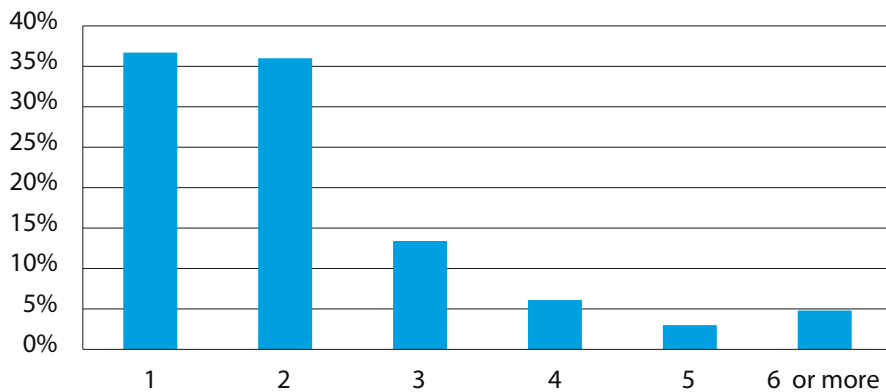
Approximately how many patients are treated daily at your facility?



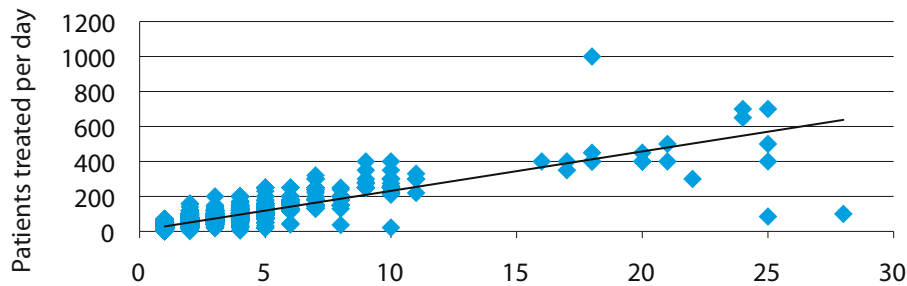
How many linear accelerators are used in your facility?

	Frequency	Percent	Valid Percent	Cumulative Percent
1 accelerator	1082	32.3	36.7	36.7
2 accelerators	1062	31.7	36	72.8
3 accelerators	394	11.7	13.4	86.1
4 accelerators	179	5.3	6.1	92.2
5 accelerators	89	2.7	3	95.2
6 accelerators or more	141	4.2	4.8	100.0
Total	2947	87.8	100.0	
Missing	408	12.2		
Total	3355	100.0		
Mean number of linear accelerators	2.33 (SD=2.19) 5th=undefined, 25th=1.2, 50th=1.9, 75th=2.8, 95th=5.6			

How many linear accelerators are used in your facility?



Patients treated per day by number of linear accelerators per facility



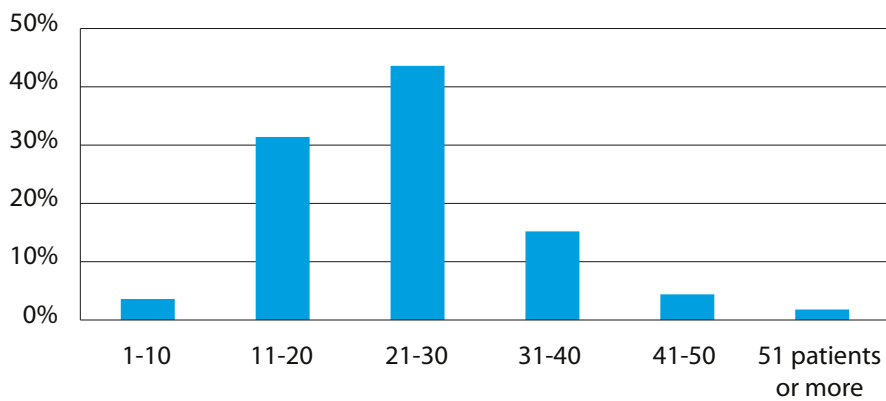
$y = 22.557x + 6.0976$
 $R^2 = 0.74221$

Number of linear accelerators

Patients treated per day per linear accelerator.

	Frequency	Percent	Valid Percent	Cumulative Percent
1-10 patients	106	3.2	3.6	3.6
11-20 patients	914	27.2	31.4	35
21-30 patients	1270	37.9	43.6	78.6
31-40 patients	444	13.2	15.2	93.8
41-50 patients	128	3.8	4.4	98.2
51 patients or more	52	1.5	1.8	100.0
Total	2914	86.9	100.0	
Missing	441	13.1		
Total	3355	100.0		
Mean patients	25.78 (SD=9.94)			
Percentiles	5th=12.2, 25th=19.6, 50th=24.7, 75th=30.2, 95th=44.7			

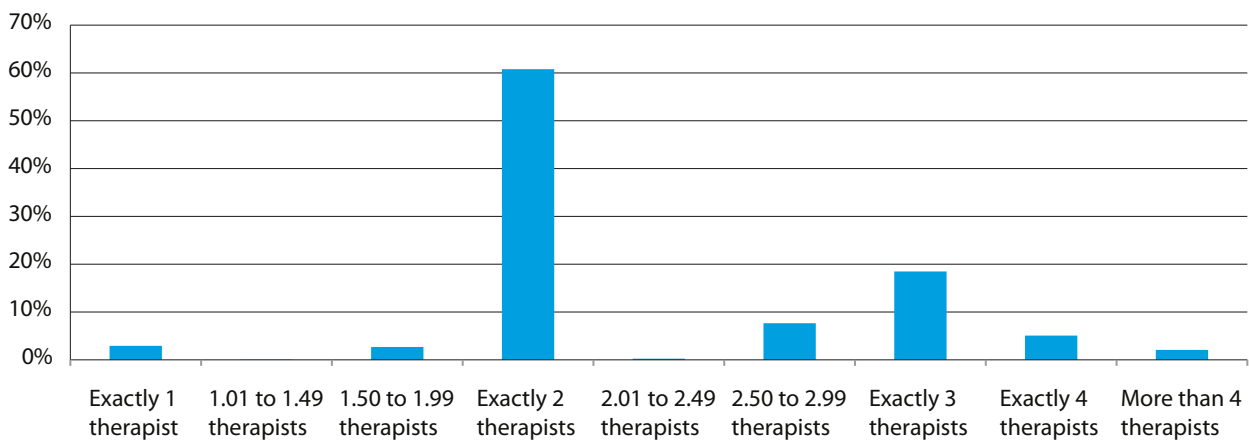
Patients treated per day per linear accelerator.



On average, how many therapists per linear accelerator are routinely scheduled at your facility?

	Frequency	Percent	Valid Percent	Cumulative Percent
Exactly 1 therapist	86	2.6	2.9	2.9
1.01 to 1.49 therapists	2	0.1	0.1	3.0
1.50 to 1.99 therapists	79	2.3	2.7	5.7
Exactly 2 therapists	1786	53.2	60.8	66.4
2.01 to 2.49 therapists	7	0.2	0.2	66.7
2.50 to 2.99 therapists	225	6.7	7.7	74.3
Exactly 3 therapists	543	16.2	18.5	92.8
Exactly 4 therapists	149	4.4	5.1	97.9
More than 4 therapists	61	1.8	2.1	100.0
Total	2938	87.6	100.0	
Missing	417	12.4		
Total	3355	100.0		
Mean therapists	2.32 (SD=.69)			
Percentiles	5th=1.6, 25th=1.9, 50th=2.1, 75th=2.8, 95th=3.8			

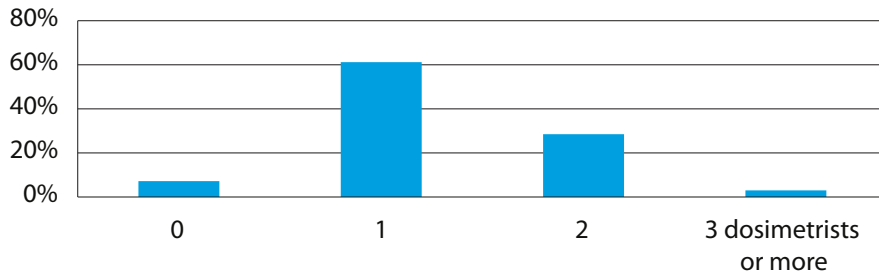
On average, how many therapists per linear accelerator are routinely scheduled at your facility?



On average, how many dosimetrists per linear accelerator are routinely scheduled at your facility?

	Frequency	Percent	Valid Percent	Cumulative Percent
0 dosimetrists	206	6.1	7.2	7.2
1 dosimetrist	1749	52.1	61.2	68.4
2 dosimetrists	815	24.3	28.5	97.0
3 dosimetrists or more	87	2.6	3.0	100.0
Total	2857	85.2	100.0	
Missing	498	14.8		
Total	3355	100.0		
Mean dosimetrists	1.24 (SD=.67)			
Percentiles	5th=.01, 25th=.94, 50th=1.07, 75th=1.8, 95th=2.2			

On average, how many dosimetrists per linear accelerator are routinely scheduled at your facility?



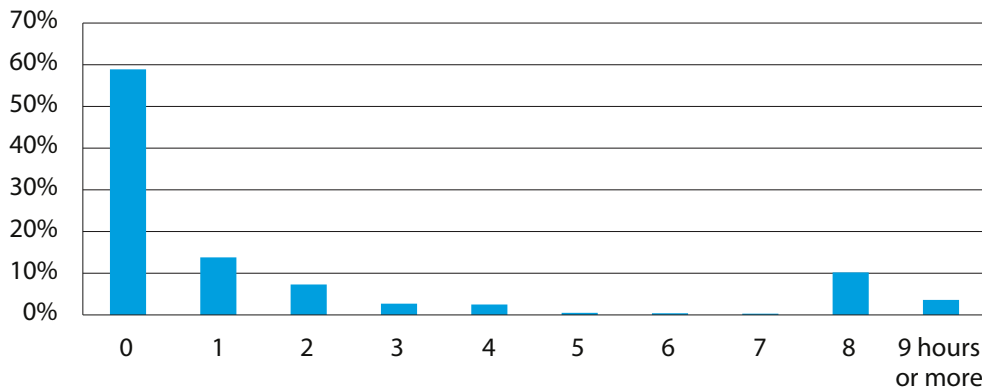
How many, if any, hours per day does your facility routinely schedule one therapist per linear accelerator?

(Rounded to the nearest hour.)

	Frequency	Percent	Valid Percent	Cumulative Percent
0 hours	1652	49.2	58.9	58.9
1 hour	386	11.5	13.8	72.6
2 hours	206	6.1	7.3	80.0
3 hours	75	2.2	2.7	82.6
4 hours	69	2.1	2.5	85.1
5 hours	14	0.4	0.5	85.6
6 hours	10	0.3	0.4	86.0
7 hours	9	0.3	0.3	86.3
8 hours	285	8.5	10.2	96.4
Nine hours or more	100	3.0	3.6	100.0
Total	2806	83.6	100.0	
Missing	549	16.4		
Overall total	3355	100.0		
Mean hours	1.73 (SD=3.20)			
Percentiles	5th=undefined, 25th=undefined, 50th=.14, 75th=1.79, 95th=8.4			

How many, if any, hours per day does your facility routinely schedule one therapist per linear accelerator?

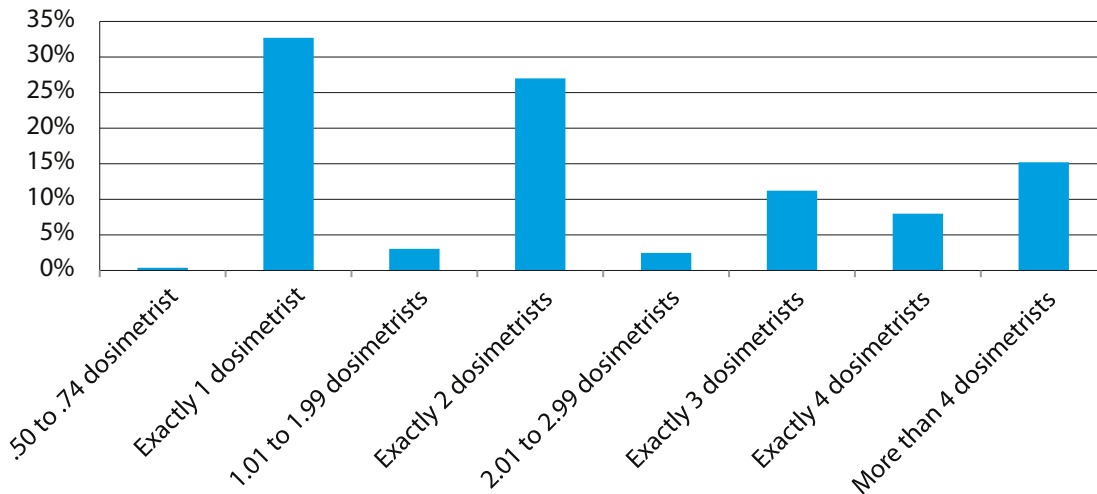
(Rounded to the nearest hour.)



How many dosimetrists are employed at your facility?

	Frequency	Percent	Valid Percent	Cumulative Percent
0.50 to 0.74 dosimetrist	2	0.1	0.4	0.4
Exactly 1 dosimetrist	172	5.1	32.7	33.1
1.01 to 1.99 dosimetrists	16	0.4	3.1	36.2
Exactly 2 dosimetrists	142	4.2	27	63.2
2.01 to 2.99 dosimetrists	13	0.4	2.5	65.7
Exactly 3 dosimetrists	59	1.8	11.2	76.9
Exactly 4 dosimetrists	42	1.3	8	84.9
More than 4 dosimetrists	80	2.4	15.2	100.0
Total	526	15.7	100.0	
Missing	2829	84.3		
Total	3355	100.0		
Mean dosimetrists	2.75 (SD=2.89)			
Percentiles	5th=.64, 25th=1.2, 50th=2.0, 75th=3.3, 95th=7.3			

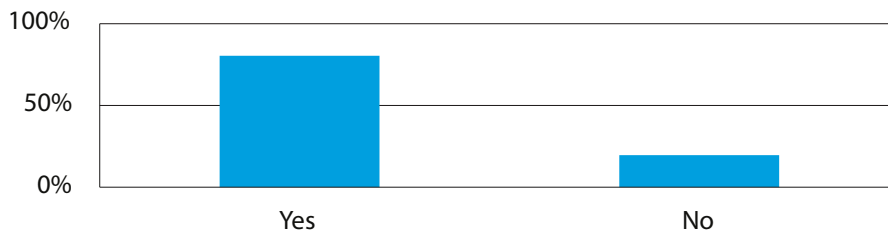
How many dosimetrists are employed at your facility?



Do you have a physicist at your facility daily?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	2394	71.4	80.4	80.4
No	584	17.4	19.6	100.0
Total	2978	88.8	100.0	
Missing	377	11.2		
Total	3355	100.0		

Do you have a physicist at your facility daily?



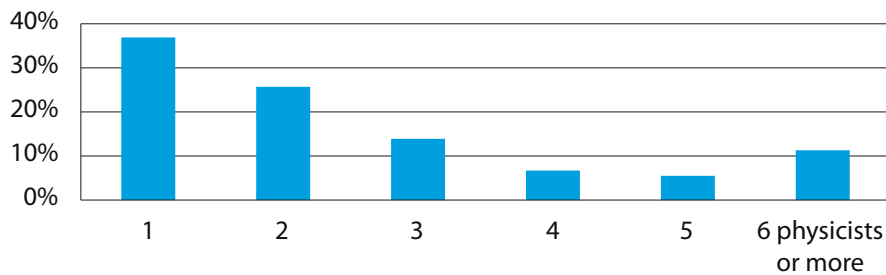
If you selected “yes” on the previous question, how many full-time equivalent physicists do you have?

(Rounded to the nearest whole number.)

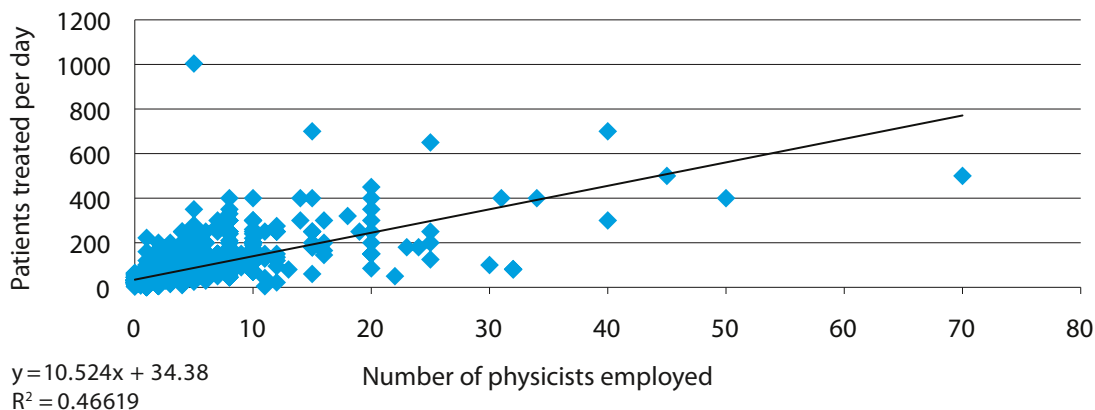
	Frequency	Percent	Valid Percent	Cumulative Percent
1 physicist	860	25.6	36.9	36.9
2 physicists	598	17.8	25.7	62.6
3 physicists	324	9.7	13.9	76.5
4 physicists	157	4.7	6.7	83.2
5 physicists	128	3.8	5.5	88.7
6 physicists or more	263	7.8	11.3	100.0
Total	2330	69.4	100.0	
Missing	1025	30.6		
Total	3355	100.0		
Mean physicists	2.96 (SD=3.85)			
Percentiles	5th=.83, 25th=1.1, 50th=2.0, 75th=3.1, 95th=8.1			

If you selected “yes” on the previous question, how many full-time equivalent physicists do you have?

(Rounded to the nearest whole number.)



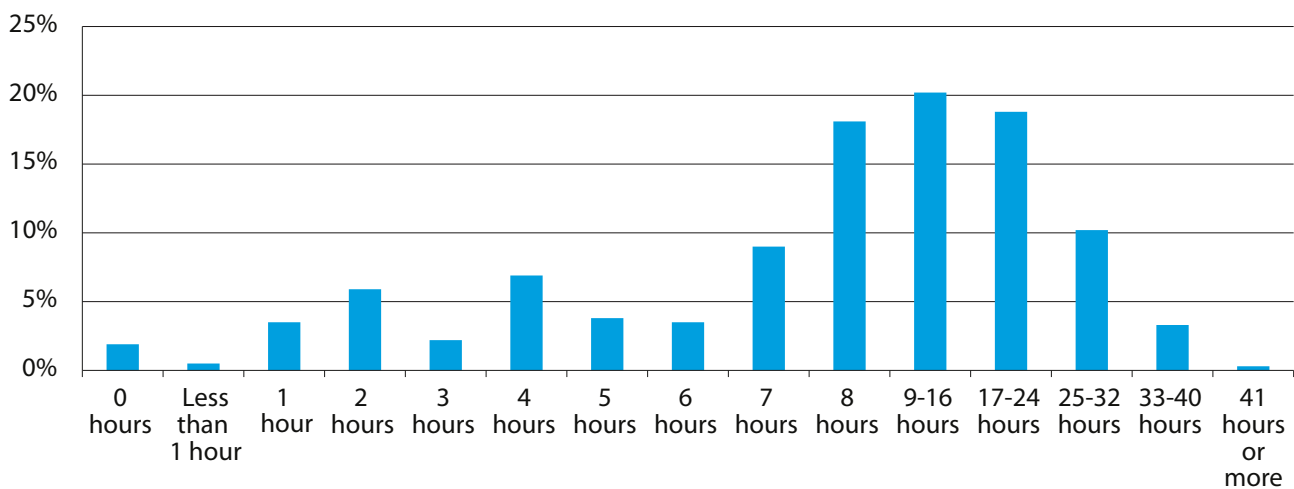
Patients treated per day by number of physicists employed



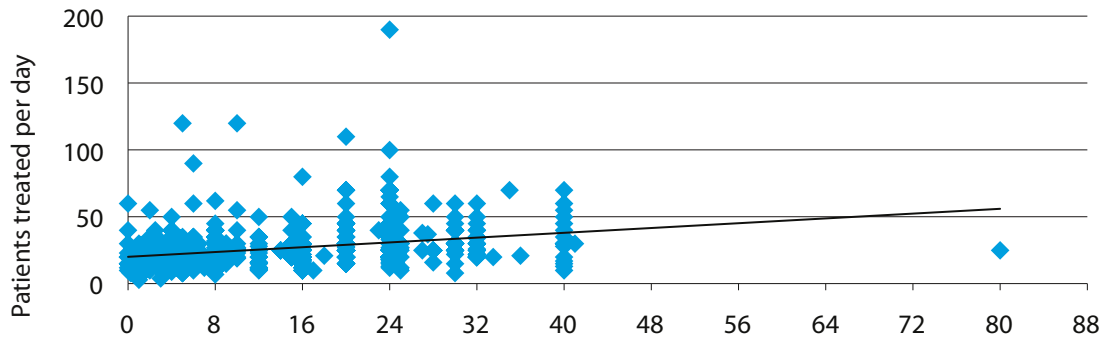
If you selected “no” to the above question, how many hours per week do you have on-site physics support?

	Frequency	Percent	Valid Percent	Cumulative Percent
0 hours	11	0.3	1.9	1.9
Less than 1 hour	3	0.1	0.5	2.1
1 hour	20	0.6	3.5	2.6
2 hours	34	1	5.9	6.1
3 hours	13	0.4	2.2	12.0
4 hours	40	1.2	6.9	14.2
5 hours	22	0.7	3.8	21.1
6 hours	20	0.6	3.5	24.9
7 hours	5	0.1	0.9	28.4
8 hours	105	3.1	18.1	29.3
9-16 hours	117	3.5	20.2	47.4
17-24 hours	109	3.2	18.8	67.6
25 to 32 hours	59	1.8	10.2	86.4
33 to 40 hours	19	0.6	3.3	96.6
41 hours or more	2	0.1	0.3	100.0
Total	579	17.3	100.0	
Missing	2776	82.7		
Total	3355	100.0		
Mean hours	13.95 (SD=10.47)			
Percentiles	5th=1.2, 25th=5.7, 50th=10.9, 75th=21.9, 95th=32.4			

If you selected “no” to the above question, how many hours per week do you have on-site physics support?

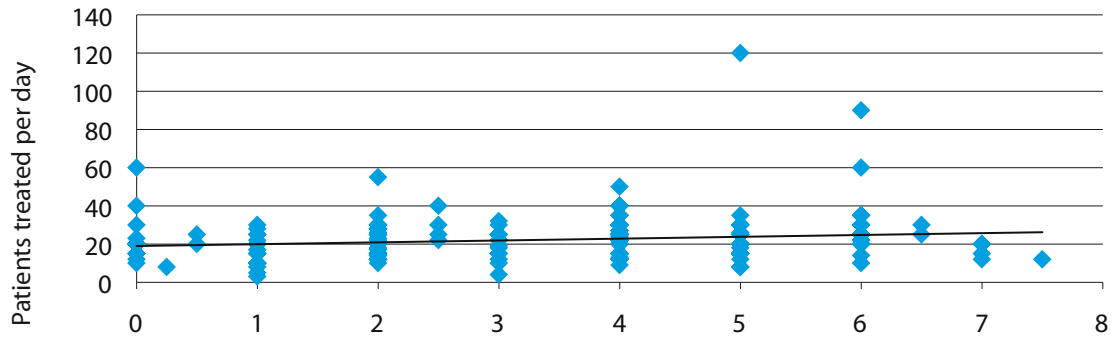


Patients treated per day by hours per week a physicist is on-site



$y = 0.4487x + 20.497$
 $R^2 = 0.06841$

Patients treated per day by physicist on-site less than 8 hours per week



$y = 0.9624x + 19.546$
 $R^2 = 0.01911$

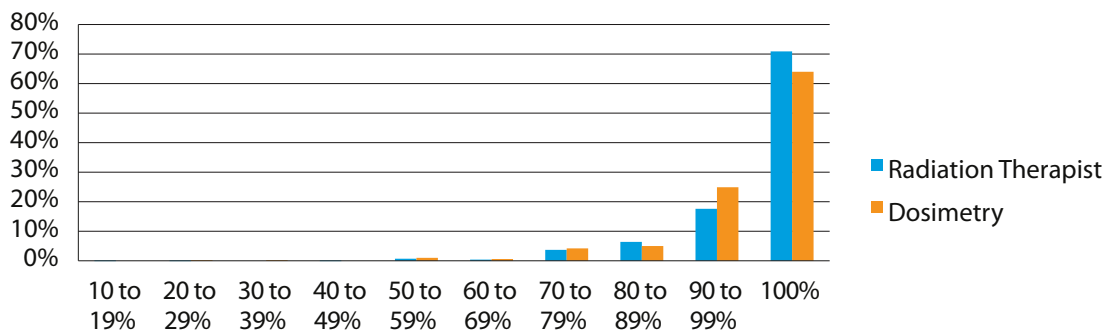
Clinical Skills

When provided the appropriate level of supervision, what percent of the procedures in your department could you perform?

	Radiation Therapist	Dosimetrist	Total
10 to 19%	0.1	NA	0.1
20 to 29%	0.1	0.2	0.2
30 to 39%	NA	0.2	0.0
40 to 49%	0.1	NA	0.1
50 to 59%	0.7	1.0	0.7
60 to 69%	0.4	0.6	0.4
70 to 79%	3.7	4.2	3.8
80 to 89%	6.4	5.0	6.1
90 to 99%	17.6	24.9	19.0
100%	70.9	64.0	69.5
Total	100.0	100.0	100.0
Mean Percent	95.7 (SD=9.3%)	95.1 (SD=9.8%)	95.6 (SD=9.4%)

There were no statistically significant differences between the percents between the two groups.

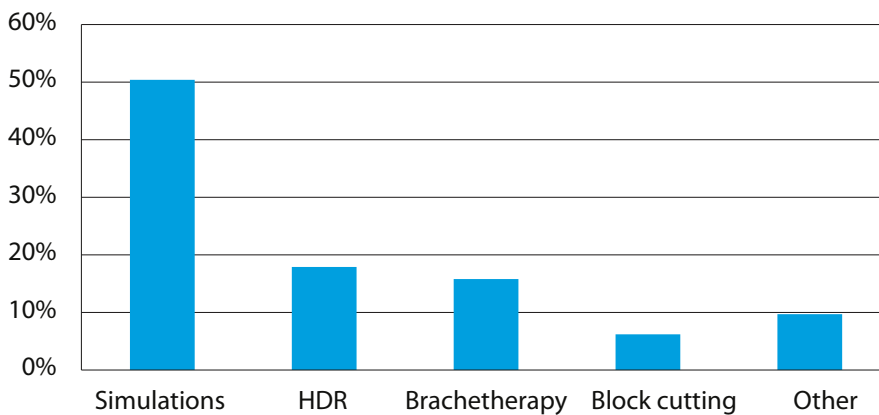
When provided the appropriate level of supervision, what percent of the procedures in your department could you perform?



If you indicated anything other than “100%” in the previous question, which procedures were you least prepared to perform? (Coded from verbatim responses.)

	Frequency	Percent	Valid Percent
Simulations	323	9.6	50.4
HDR	115	3.4	17.9
Brachytherapy	101	3.0	15.8
Block cutting	40	1.2	6.2
Other	62	1.8	9.7
Total	641	19.1	100.0
Missing	2714	80.9	
Total	3355	100.0	

If you indicated anything other than “100%” in the previous question, which procedures were you least prepared to perform? (Coded from verbatim responses.)

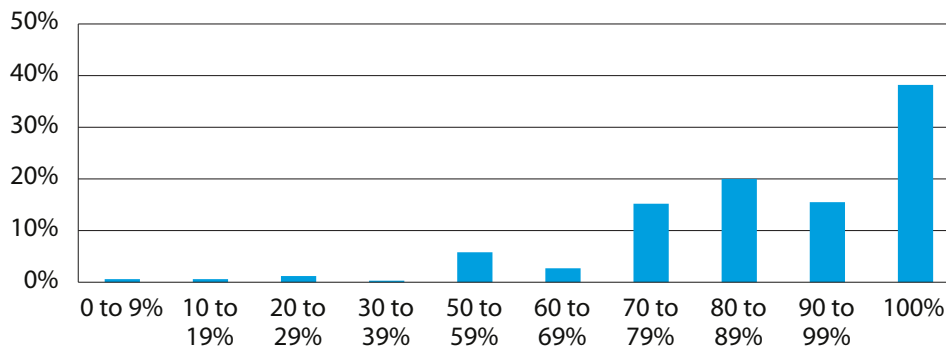


Questions for Managers on the Skills of Staff

When provided the appropriate level of supervision, what percent of the procedures in your department can new graduates perform?

	Frequency	Valid Percent	Cumulative Percent
0 to 9%	2	0.6	0.6
10 to 19%	2	0.6	1.2
20 to 29%	4	1.2	2.4
30 to 39%	1	0.3	2.7
50 to 59%	19	5.8	8.5
60 to 69%	9	2.7	11.2
70 to 79%	50	15.2	26.4
80 to 89%	66	20	46.4
90 to 99%	51	15.5	61.8
100%	126	38.2	100.0
Total	330	100.0	
Mean percent	84.7% (SD=18.3%)		
Percentiles	5th=46.0, 25th=76.5, 50th=88.7, 75th=99.4, 95th=undefined		

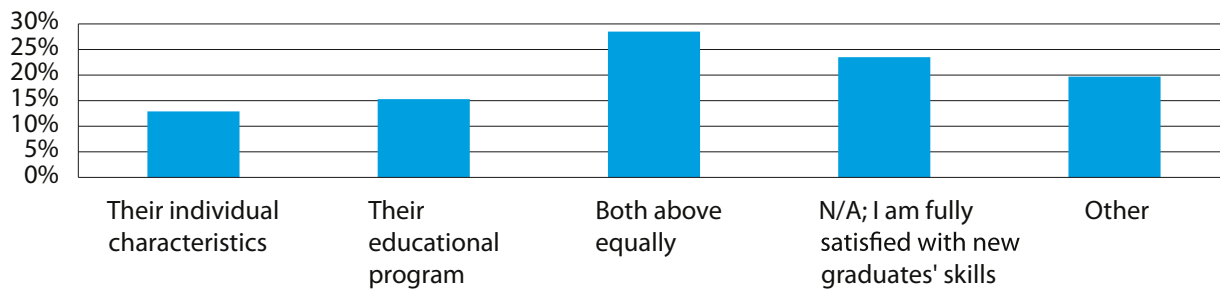
When provided the appropriate level of supervision, what percent of the procedures in your department can new graduates perform?



In your opinion, the lack of skills with new graduates you hire is due primarily to:

	Frequency	Percent	Valid Percent	Cumulative Percent
Their individual characteristics	44	1.3	12.9	12.9
Their educational program	52	1.5	15.3	28.2
Both above equally	97	2.9	28.5	56.8
N/A; I am fully satisfied with new graduates' skills	80	2.4	23.5	80.3
Other	67	2.0	19.7	100.0
Total	340	10.1	100.0	
Missing	3015	89.9		
Total	3355	100.0		

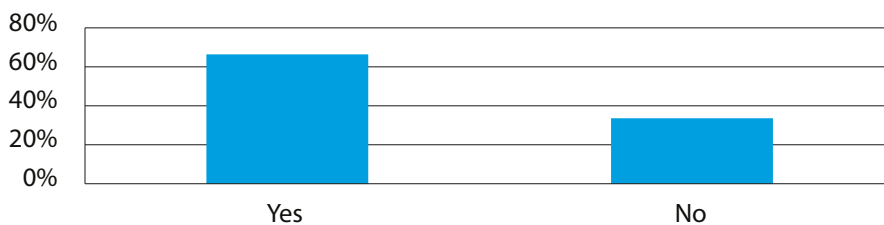
In your opinion, the lack of skills with new graduates you hire is due primarily to:



Do you believe there is a difference in skills of students graduating from different types of programs?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	223	6.6	66.4	66.4
No	113	3.4	33.6	100.0
Total	336	10.0	100.0	
Missing	3019	90.0		
Total	3355	100.0		

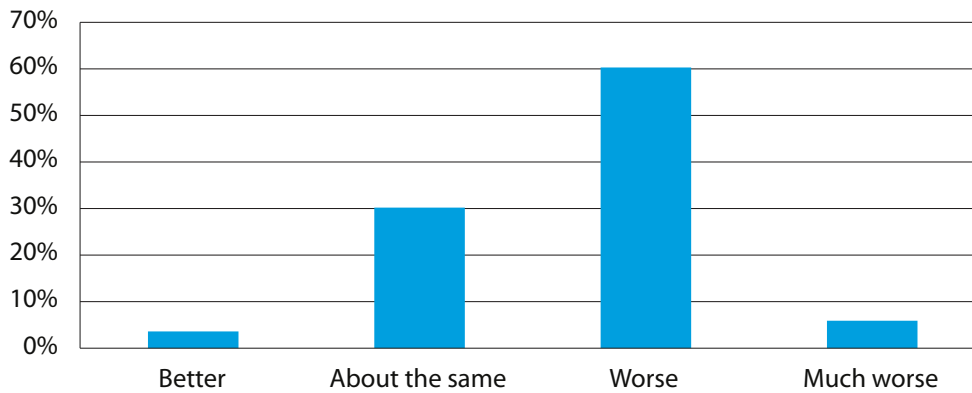
Do you believe there is a difference in skills of students graduating from different types of programs?



In your experience, compared to therapists with three or five years of experience, new graduates are:

	Frequency	Percent	Valid Percent	Cumulative Percent
Much better=2	0	0.0	0.0	0.0
Better=1	12	0.4	3.6	3.6
About the same=0	102	3.0	30.2	33.7
Worse=-1	204	6.1	60.4	94.1
Much worse=-2	20	0.6	5.9	100.0
Total	338	10.1	100.0	
Missing	3017	89.9		
Total	3355	100.0		
Mean (Rating=2,1,0,-1,-2)	-0.69 (SD=.64)			

In your experience, compared to therapists with three or five years of experience, new graduates are:



Daily Practices

Does your facility's policy require that IMRT/VMAT have plan-specific quality assurance (QA) procedures performed prior to the first day of treatment?

	Frequency	Percent	Valid Percent
Yes	2511	74.8	97.3
No	71	2.1	2.7
Total	2582	77.0	100.0
Do not use these techniques	62	1.8	
Missing	711	21.2	
Total missing	773	23.0	
Total	3355	100.0	

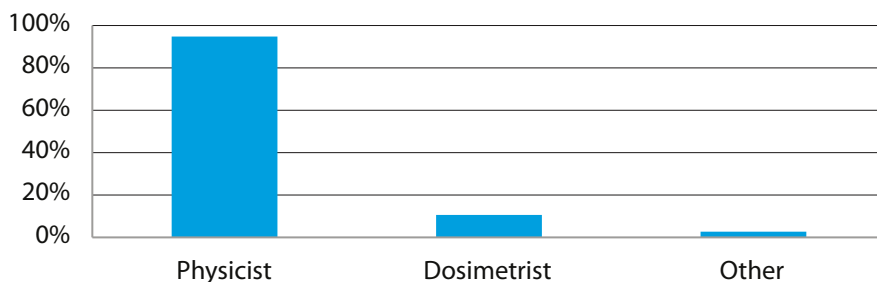
Does your facility's policy require that IMRT/VMAT have plan-specific quality assurance (QA) procedures performed prior to the first day of treatment?



If you selected "yes" on the previous question, who performs this second check?

	N	Percent	Percent of Respondents
Physicist	491	87.7	94.8
Dosimetrist	55	9.8	10.6
Other	14	2.5	2.7
Total	560	100.0	108.1

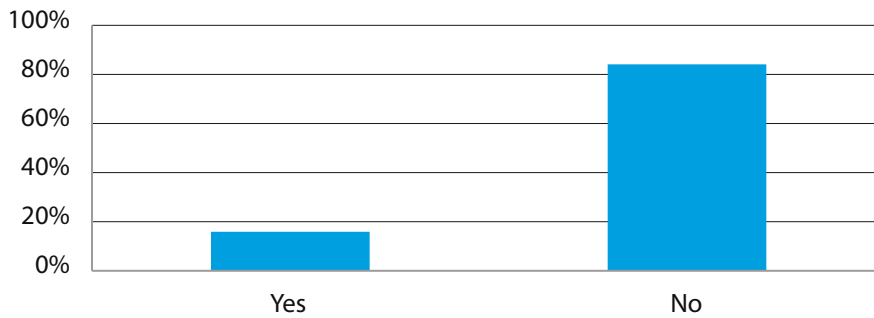
If you selected "yes" on the previous question, who performs this second check?



Does your facility use remote planning services?

	Frequency	Percent	Valid Percent
Yes	86	2.5	15.9
No	454	13.4	84.1
Total	540	15.9	100.0
Missing	2855	84.1	
Total	3395	100.0	

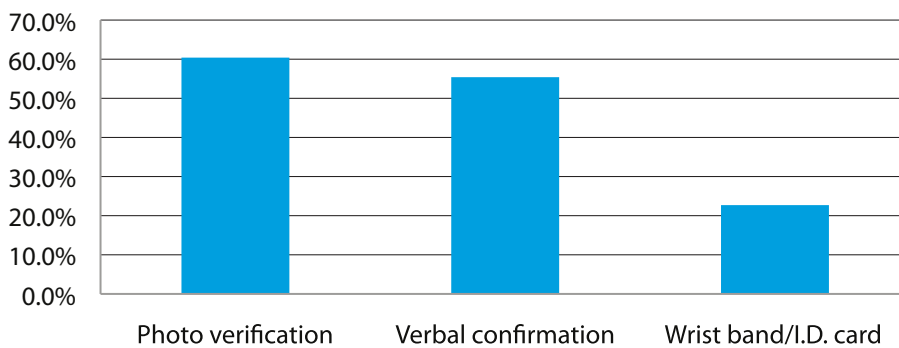
Does your facility use remote planning services?



What method of patient verification does your facility employ?

	Frequency	Percent of Respondents
Photo verification	2025	60.4
Verbal confirmation	1858	55.4
Wrist band/I.D. card	763	22.7
Total	4646	138.5

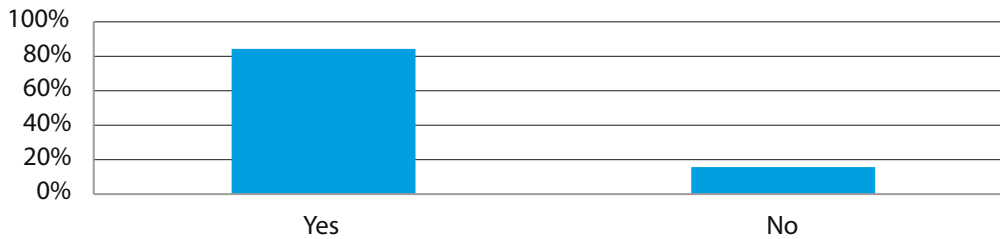
What method of patient verification does your facility employ?



Does your facility's policy require that another person perform a second check on 2-D and 3-D treatment plans before the first day of treatment?

	Frequency	Percent	Valid Percent
Yes	455	13.6	84.3
No	85	2.5	15.7
Total	540	16.1	100.0
Do not use these techniques	4	0.1	
Missing	2811	83.8	
Total missing	2815	83.9	
Total	3355	100.0	

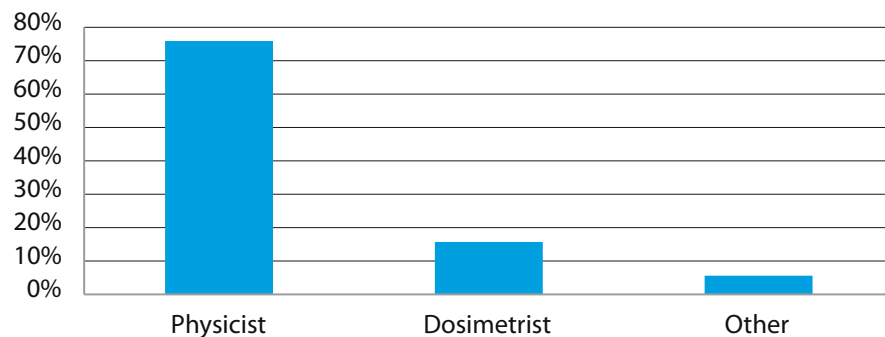
Does your facility's policy require that another person perform a second check on 2-D and 3-D treatment plans before the first day of treatment?



If you selected "yes" that your facility's policy requires that another person perform a second check on 2-D and 3-D treatment plans before the first day of treatment, who performs this second check?

	Frequency	Percent of Respondents who use 2-D/3-D
Physicist	410	75.9
Dosimetrist	85	15.7
Other	30	5.6
Total	525	97.2

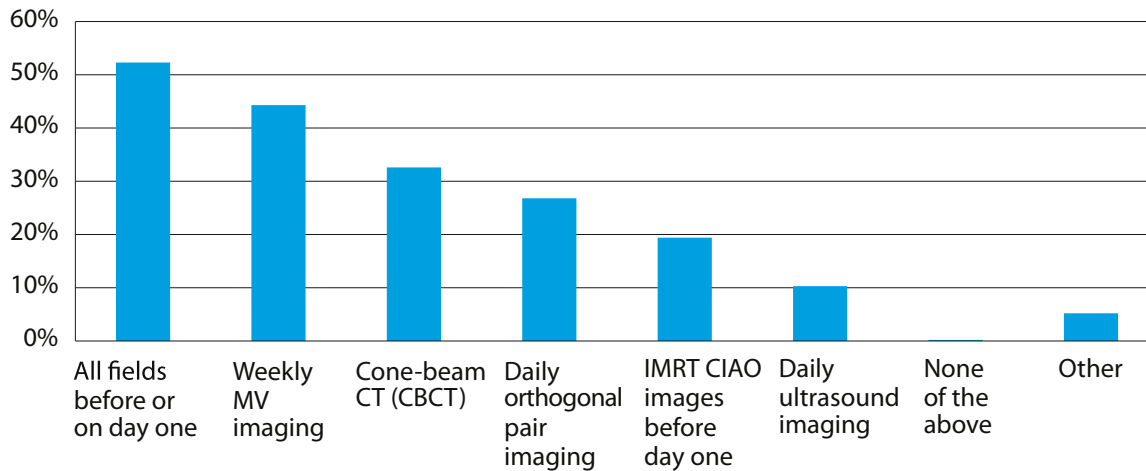
If you selected "yes" that your facility's policy requires that another person perform a second check on 2-D and 3-D treatment plans before the first day of treatment, who performs this second check?



What treatment imaging protocols does your facility use?

	Frequency	Percent of Respondents
All fields before or on day one	1755	52.3
Weekly MV imaging	1487	44.3
Cone-beam CT (CBCT)	1093	32.6
Daily orthogonal pair imaging	900	26.8
IMRT CIAO images before day one	651	19.4
Daily ultrasound imaging	346	10.3
None of the above	7	0.2
Other	176	5.2
Total	6415	191.2

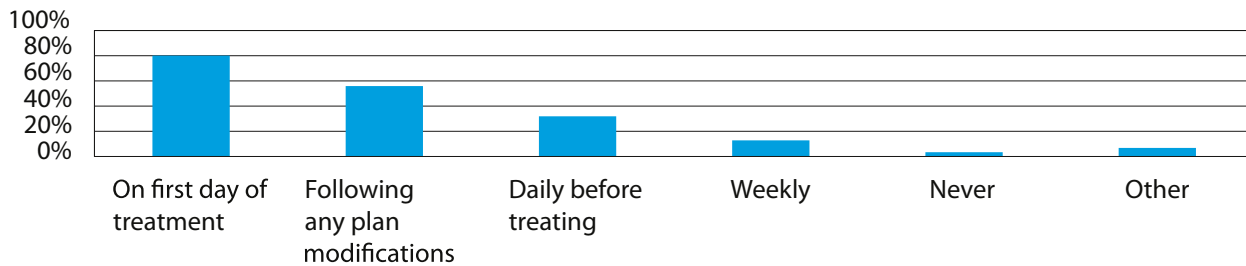
What treatment imaging protocols does your facility use?



When does your facility require that all planned treatment parameters be *manually* verified by the treating therapist at the treatment machine?

	Frequency	Percent	Percent of Respondents
On first day of treatment	1675	41.9	80.1
Following any plan modifications	1169	29.3	55.9
Daily before treating	668	16.7	31.9
Weekly	268	6.7	12.8
Never	71	1.8	3.4
Other	142	3.6	6.8
Total	3993	100.0	190.9

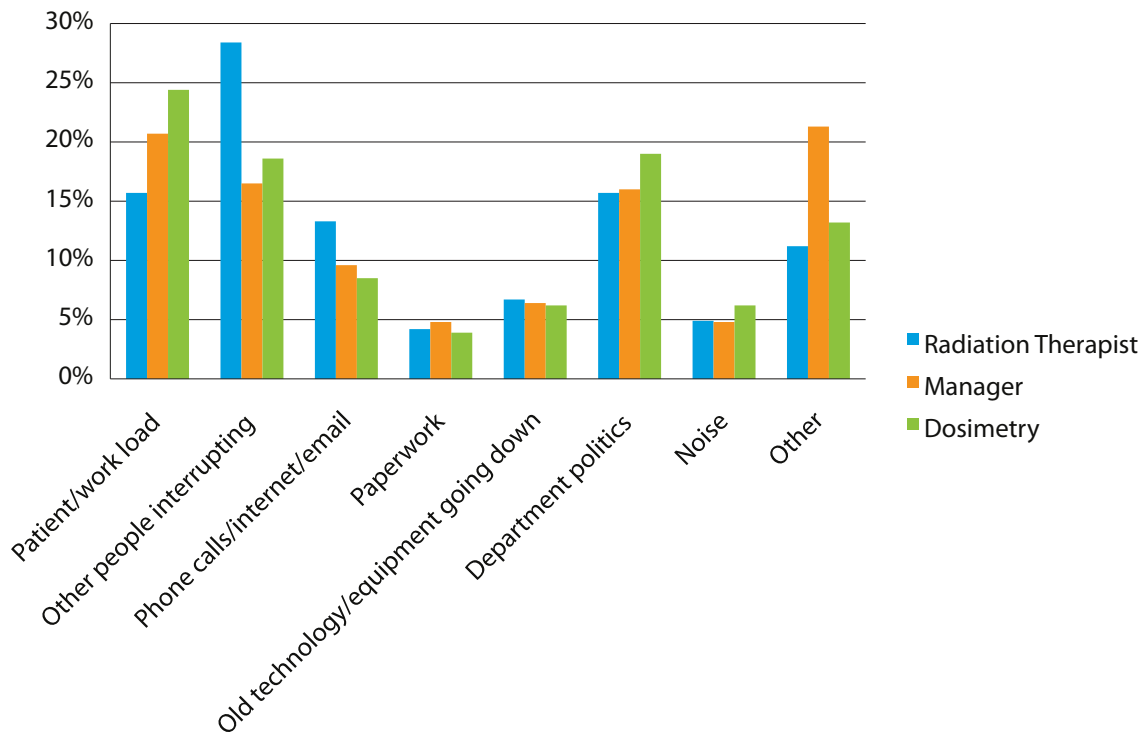
When does your facility require that all planned treatment parameters be *manually* verified by the treating therapist at the treatment machine?



What is the primary distraction in your clinical setting? (Coded from verbatim responses.)

		Radiation Therapist	Manager	Dosimetrist	Total
Patient/work load	Count	180	39	63	282
	%	15.7%	20.7%	24.4%	17.7%
Other people interrupting (nurses, therapists, Drs.)	Count	326	31	48	405
	%	28.4%	16.5%	18.6%	25.4%
Phone calls/internet/e-mail	Count	153	18	22	193
	%	13.3%	9.6%	8.5%	12.1%
Paperwork	Count	48	9	10	67
	%	4.2%	4.8%	3.9%	4.2%
Old technology/equipment going down	Count	77	12	16	105
	%	6.7%	6.4%	6.2%	6.6%
Department politics	Count	180	30	49	259
	%	15.7%	16.0%	19.0%	16.2%
Noise	Count	56	9	16	81
	%	4.9%	4.8%	6.2%	5.1%
Other	Count	129	40	34	203
	%	11.2%	21.3%	13.2%	12.7%
Total	Count	1149	188	258	1595
	%	100.0%	100.0%	100.0%	100.0%

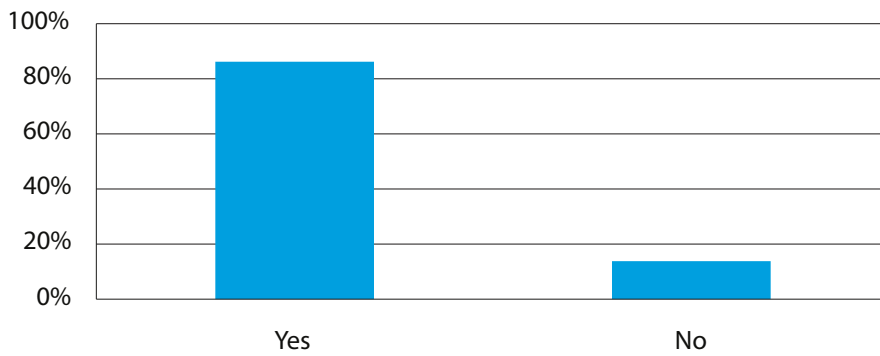
What is the primary distraction in your clinical setting? (Coded from verbatim responses.)



Does your department track errors in the clinical setting?

	Frequency	Percent	Valid Percent
Yes	2530	75.4	86.2
No	404	12.0	13.8
Total	2934	87.4	100.0
Missing	421	12.5	
Total	3355	100.0	

Does your department track errors in the clinical setting?

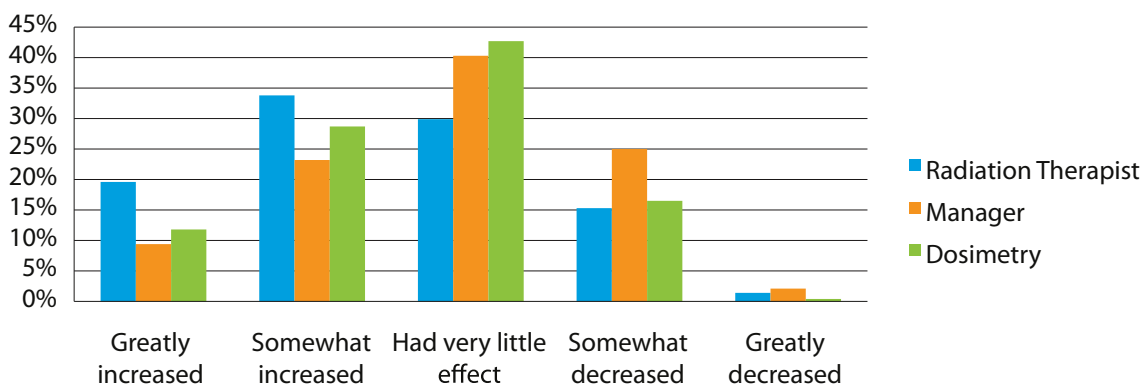


Technological Impacts

How have technological developments over the past five years affected the number of patients you and your coworkers can treat in a given week?

		Radiation Therapist	Manager	Dosimetrist	Total
Greatly increased the number of patients treated =2	Count	409	32	64	505
	%	19.6%	9.4%	11.8%	17.0%
Somewhat increased number of patients treated=1	Count	704	79	155	938
	%	33.8%	23.2%	28.7%	31.6%
Had very little effect on the number of patients treated=0	Count	623	137	231	991
	%	29.9%	40.3%	42.7%	33.4%
Somewhat decreased number of patients treated =-1	Count	318	85	89	492
	%	15.3%	25.0%	16.5%	16.6%
Greatly decreased number of patients treated =-2	Count	29	7	2	38
	%	1.4%	2.1%	0.4%	1.3%
Total	Count	2083	340	541	2964
	%	100.0%	100.0%	100.0%	100.0%
Mean rating (2,1,0,-1,-2)		0.55	0.13	0.35	0.47
Significant differences among groups	T>D>M(P <.001,=.004)				

How have technological developments over the past five years affected the number of patients you and your coworkers can treat in a given week?

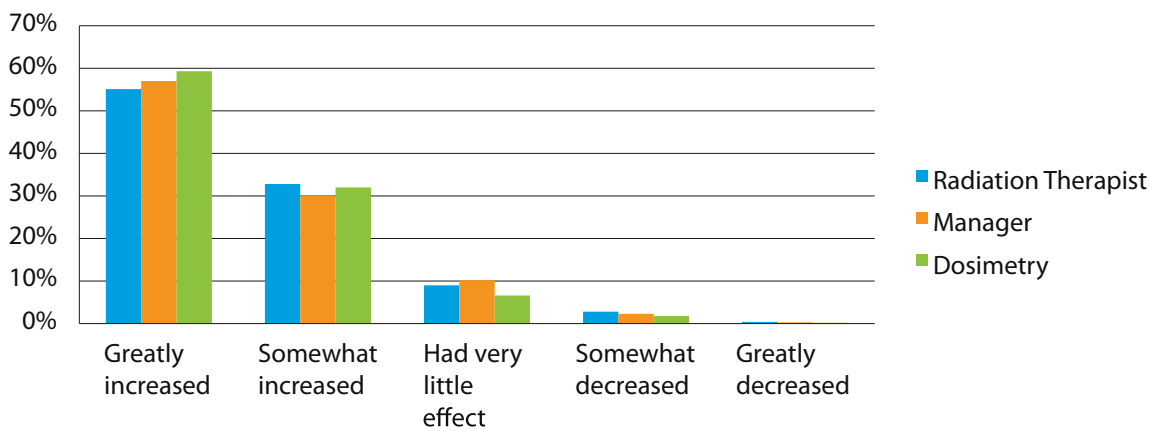


How have technological developments over the past five years affected the quality of care you are able to deliver to patients?

		Radiation Therapist	Manager	Dosimetrist	Total
Greatly increased quality of care =2	Count	1150	195	322	1667
	%	55.1%	57.0%	59.3%	56.1%
Somewhat increased quality of care =1	Count	684	103	174	961
	%	32.8%	30.1%	32.0%	32.3%
Had very little effect on quality of care=0	Count	187	35	36	258
	%	9.0%	10.2%	6.6%	8.7%
Somewhat decreased quality of care =-1	Count	59	8	10	77
	%	2.8%	2.3%	1.8%	2.6%
Greatly decreased quality of care =-2	Count	8	1	1	10
	%	0.4%	0.3%	0.2%	0.3%
Total	Count	2088	342	543	2973
	%	100.0%	100.0%	100.0%	100.0%
Mean rating (2,1,0,-1,-2)		1.39	1.41	1.48	1.41

There were no statistically significant differences in the response patterns among the three groups.

How have technological developments over the past five years affected the quality of care you are able to deliver to patients?



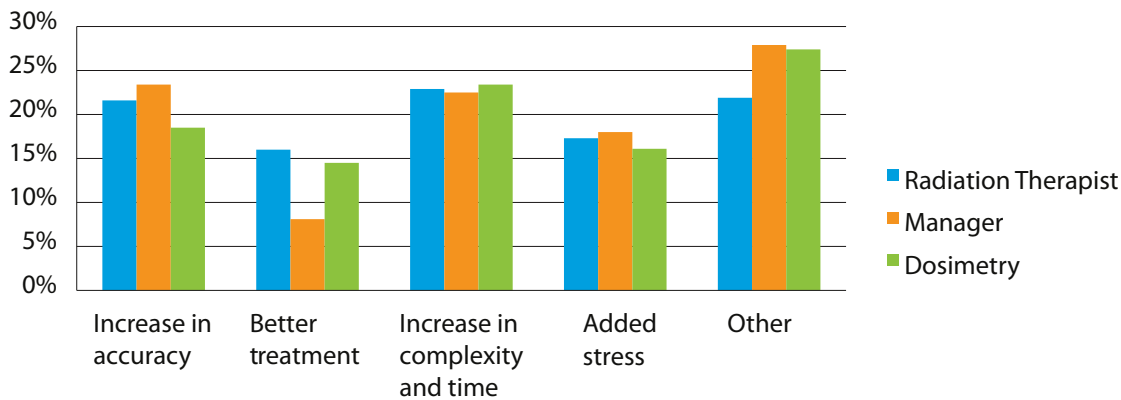
What other effects have technological developments had on your department over the past few years?

(Coded from verbatim responses.)

		Radiation Therapist	Manager	Dosimetrist	Total
Increase in accuracy	Count	84	26	23	133
	%	21.6%	23.4%	18.5%	21.3%
Better treatment	Count	62	9	18	89
	%	16.0%	8.1%	14.5%	14.3%
Increase in complexity and time of their job	Count	89	25	29	143
	%	22.9%	22.5%	23.4%	23.0%
Added stress	Count	67	20	20	107
	%	17.3%	18.0%	16.1%	17.2%
Other	Count	86	31	34	150
	%	21.9%	27.9%	27.4%	24.1%
Total	Count	388	111	124	623
	%	100.0%	100.0%	100.0%	100.0%

What other effects have technological developments had on your department over the past few years?

(Coded from verbatim responses.)

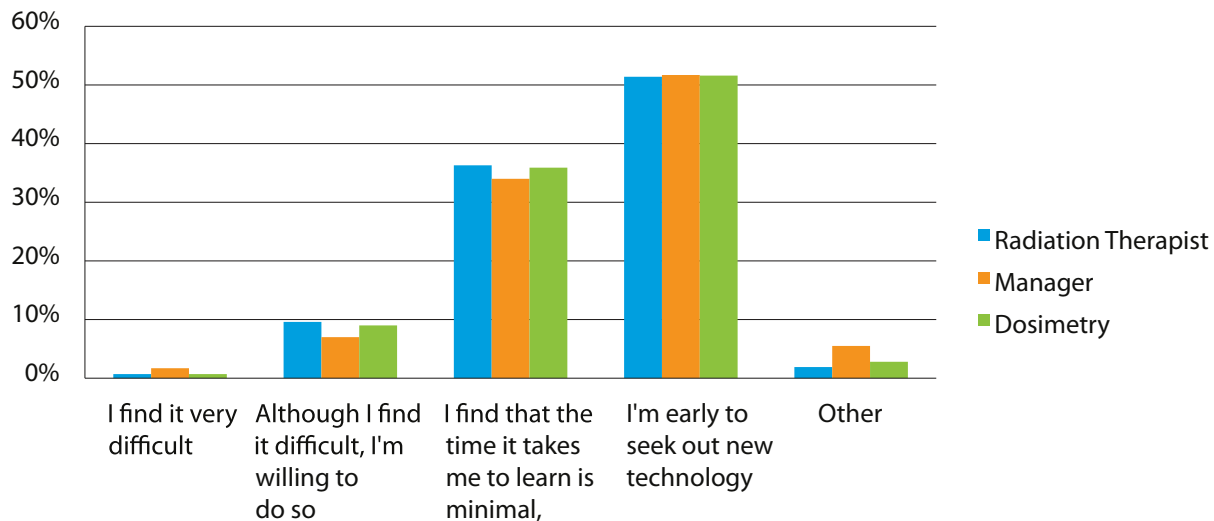


How would you rate your eagerness, as well as your ability, to adapt to and make use of technological developments in your practice?

		Radiation Therapist	Manager	Dosimetrist	Total
I find it very difficult to get "up to speed" in the use of new technology=-2	Count	15	6	4	25
	%	0.7%	1.7%	0.7%	0.8%
Although I find learning to use new technology difficult, I'm willing and able to do so=-1	Count	202	24	49	275
	%	9.6%	7.0%	9.0%	9.2%
I find that the time it takes me to learn to use new technology well is minimal, given the potential benefits=1	Count	761	117	195	1073
	%	36.3%	34.0%	35.9%	36.0%
I'm early to seek out new technology and quickly get "up to speed."=2	Count	1078	178	280	1536
	%	51.4%	51.7%	51.6%	51.5%
Other	Count	40	19	15	74
	%	1.9%	5.5%	2.8%	2.5%
Total	Count	2096	344	543	2983
	%	100.0%	100.0%	100.0%	100.0%
Mean rating (2,1,-1,-2)		1.41	1.44	1.42	1.42

There were no statistically significant differences in the response patterns among the three groups.

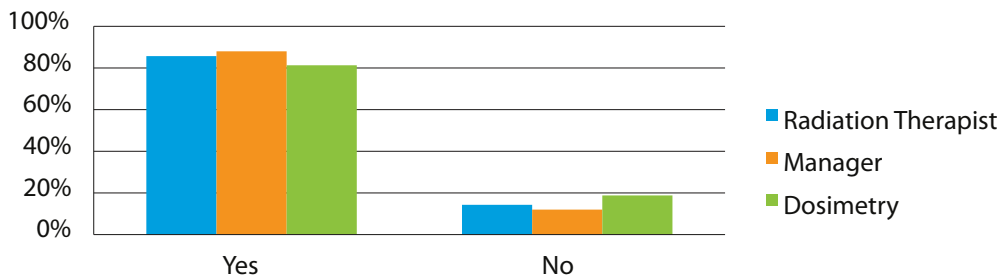
How would you rate your eagerness, as well as your ability, to adapt to and make use of technological developments in your practice?



When implementing new technology do you feel that you are adequately prepared to begin using the technology?

		Radiation Therapist	Manager	Dosimetrist	Total
Yes	Count	1786	301	442	2529
	%	85.7%	88.0%	81.3%	85.1%
No	Count	299	41	102	442
	%	14.3%	12.0%	18.8%	14.9%
Total	Count	2085	342	544	2971
	%	100.0%	100.0%	100.0%	100.0%
Significant differences among groups		M, T>D (P =.018, .030)			

When implementing new technology do you feel that you are adequately prepared to begin using the technology?

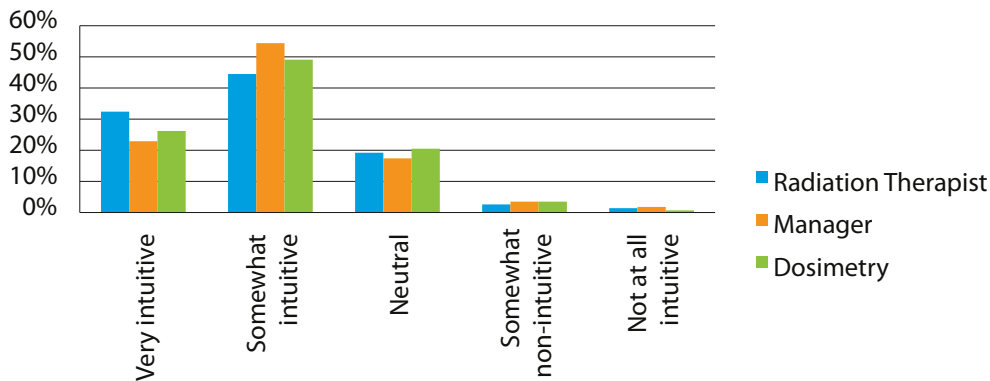


How intuitive is the equipment you work with?

		Radiation Therapist	Manager	Dosimetrist	Total
Very intuitive=2	Count	671	78	142	891
	%	32.4%	22.9%	26.2%	30.2%
Somewhat intuitive=1	Count	921	185	266	1372
	%	44.5%	54.4%	49.1%	46.5%
Neutral=0	Count	397	59	111	567
	%	19.2%	17.4%	20.5%	19.2%
Somewhat non-intuitive=-1	Count	54	12	19	85
	%	2.6%	3.5%	3.5%	2.9%
Not at all intuitive=-2	Count	28	6	4	38
	%	1.4%	1.8%	0.7%	1.3%
Total	Count	2071	340	542	2953
	%	100.0%	100.0%	100.0%	100.0%
Mean rating (2,1,0,-1,-2)		1.04	.93	.96	1.01

There were no statistically significant differences in the response patterns among the three groups.

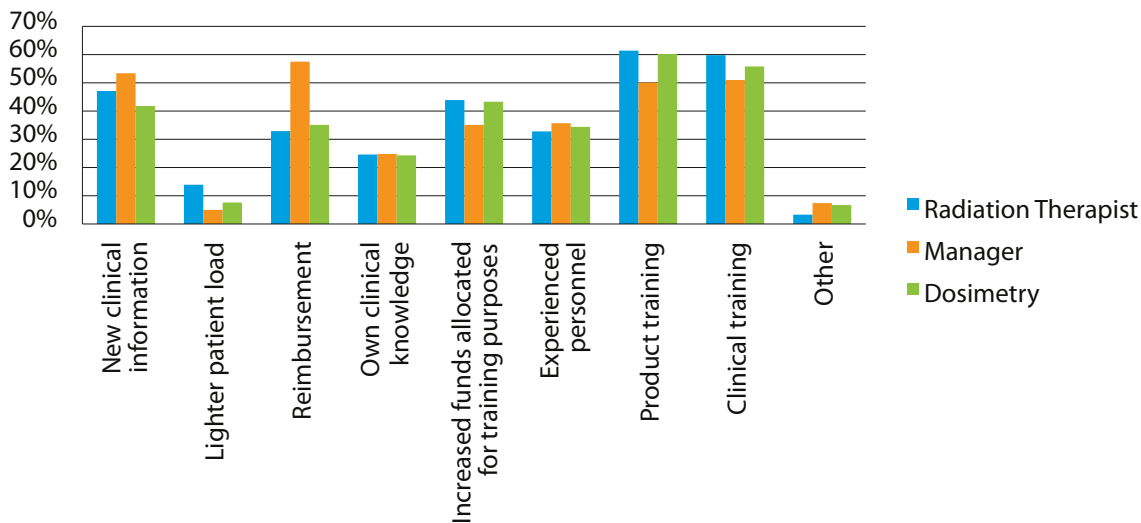
How intuitive is the equipment you work with?



What are the key factors that would help you adopt new clinical capabilities at your center?

		Radiation Therapist	Manager	Dosimetrist
New clinical information	Count	970	181	225
	%	47.1%	53.4%	41.8%
Lighter patient load	Count	287	17	41
	%	13.9%	5.0%	7.6%
Reimbursement	Count	678	195	189
	%	32.9%	57.5%	35.1%
Own clinical knowledge	Count	506	84	131
	%	24.6%	24.8%	24.3%
Increased funds allocated for training purposes	Count	904	119	233
	%	43.9%	35.1%	43.3%
Experienced personnel	Count	676	121	185
	%	32.8%	35.7%	34.4%
Product training	Count	1264	170	324
	%	61.4%	50.1%	60.2%
Clinical training	Count	1231	173	300
	%	59.8%	51.0%	55.8%
Other	Count	68	25	36
	%	3.3%	7.4%	6.7%
Total	Count	2060	339	538

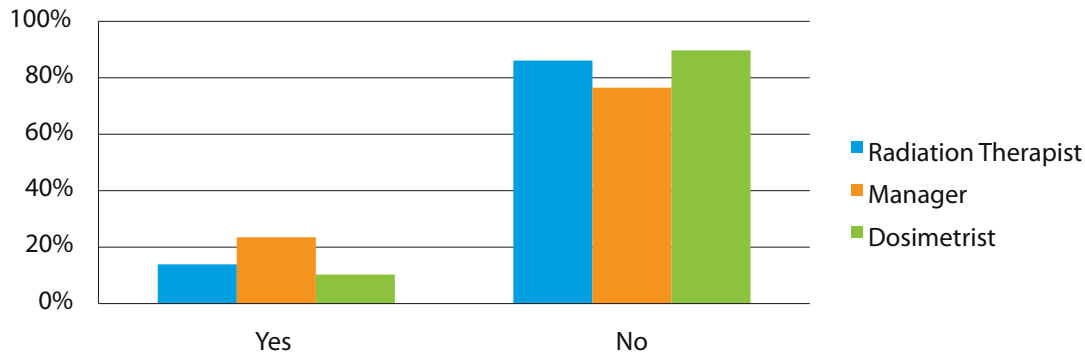
What are the key factors that would help you adopt new clinical capabilities at your center?



Are there areas in your discipline that have become so unique and specialized that they warrant special recognition through certification?

		Radiation Therapist	Manager	Dosimetrist	Total
Yes	Count	278	78	54	410
	%	13.9%	23.5%	10.3%	14.3%
No	Count	1729	254	472	2455
	%	86.1%	76.5%	89.7%	85.7%
Total	Count	2007	332	526	2865
	%	100.0%	100.0%	100.0%	100.0%
Significant differences among groups		M>T,D (P<.001)			

Are there areas in your discipline that have become so unique and specialized that they warrant special recognition through certification?



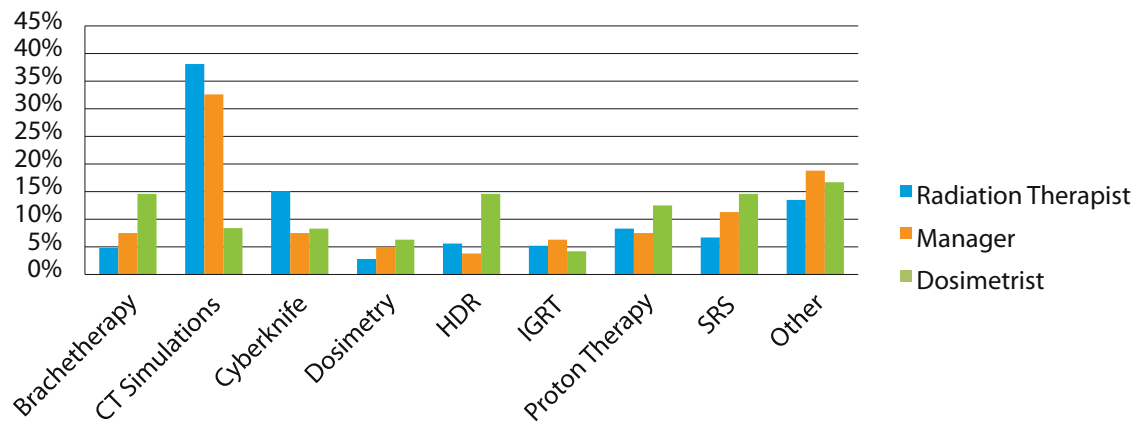
If you selected “yes” on the previous question, what are the areas that should be separately certified?

(Coded from verbatim responses.)

		Radiation Therapist	Manager	Dosimetrist	Total
Brachytherapy	Count	12	6	7	25
	%	4.8%	7.5%	14.6%	6.6%
CT simulation	Count	96	26	4	126
	%	38.1%	32.6%	8.4%	33.2%
Cyberknife	Count	38	6	4	48
	%	15.1%	7.5%	8.3%	12.6%
Dosimetry	Count	7	4	3	14
	%	2.8%	5.0%	6.3%	3.7%
HDR	Count	14	3	7	24
	%	5.6%	3.8%	14.6%	6.3%
IGRT	Count	13	5	2	20
	%	5.2%	6.3%	4.2%	5.3%
Proton therapy	Count	21	6	6	33
	%	8.3%	7.5%	12.5%	8.7%
SRS	Count	17	9	7	33
	%	6.7%	11.3%	14.6%	8.7%
Other	Count	34	15	8	57
	%	13.5%	18.8%	16.7%	15.0%
Total	Count	252	80	48	380
	%	100.0%	100.0%	100.0%	100.0%

If you selected “yes” on the previous question, what are the areas that should be separately certified?

(Coded from verbatim responses.)

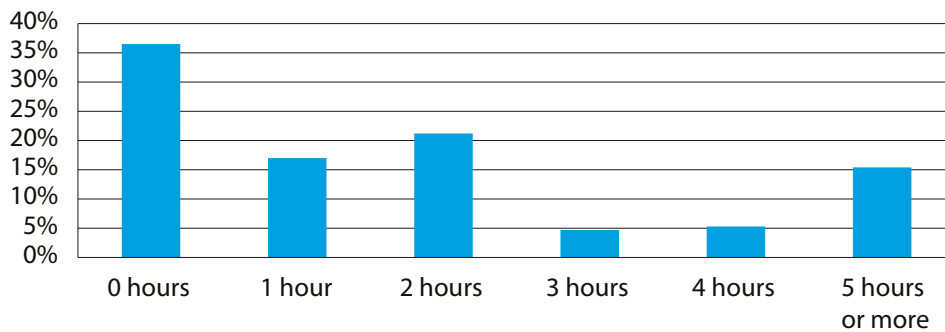


Continuing Education

On average, how many hours each month do you spend on remote learning outside of the workplace?

	Frequency	Percent	Valid Percent	Cumulative Percent
0 hours	978	29.2	36.5	36.5
1 hour	456	13.6	17	53.4
2 hours	570	17.0	21.2	74.7
3 hours	125	3.7	4.7	79.4
4 hours	141	4.2	5.3	84.6
5 hours or more	413	12.3	15.4	100.0
Total	2683	80.0	100.0	
Missing	672	20.0		
Total	3355	100.0		

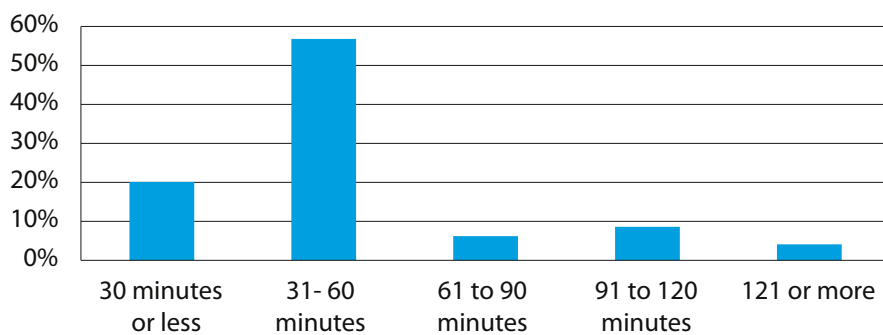
On average, how many hours each month do you spend on remote learning outside of the workplace?



What is the ideal duration, in minutes, for a remote training session?

	Frequency	Percent	Valid Percent
30 minutes or less	456	13.6	20.1
31- 60 minutes	1287	38.4	56.8
61 to 90 minutes	140	4.2	6.2
91 to 120 minutes	195	5.8	8.6
121 or more	93	2.8	4.1
Total	2265	67.5	100.0
Zero	94	2.8	
Missing	1090	32.5	
Total	3355	100.0	
Mean minutes	67.8 (SD=55.5)		
Percentiles	5th=25.5, 25th=42.3, 50th=55.9, 75th=71.2, 95th=145.0		

What is the ideal duration, in minutes, for a remote training session?

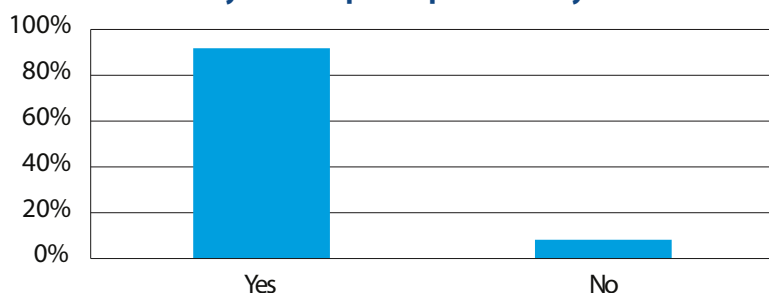


Do you, as a manager, have the latitude to facilitate time for training activities (vendor or otherwise)?

	Frequency	Percent	Valid Percent
Yes	312	9.3	91.8
No	28	0.8	8.2
Total	340	10.1	100
Missing	3015	89.9	
Total	3355	100.0	

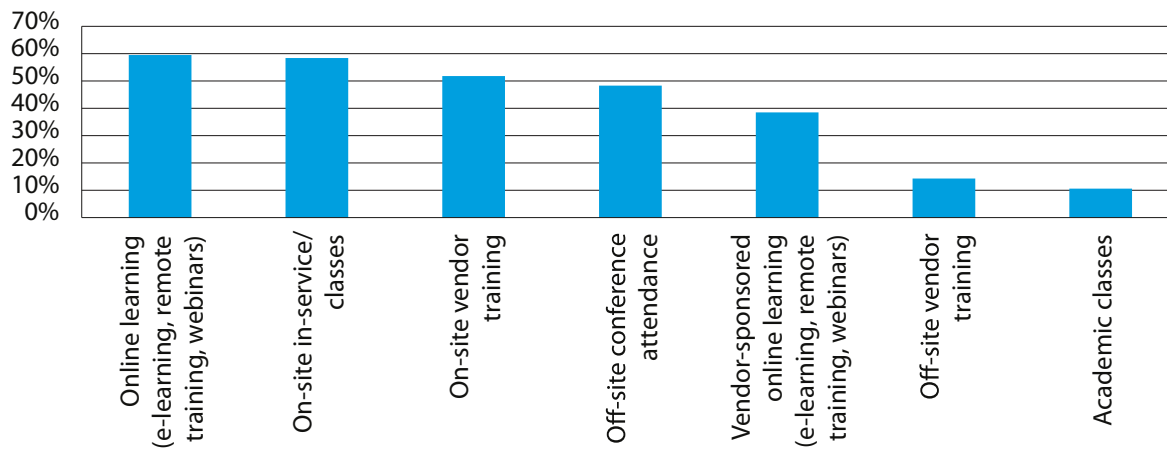
Do you, as a manager, have the latitude to facilitate time for training activities (vendor or otherwise)?

Please indicate if you have participated in any of the following learning events in the past two years.



	Frequency	Percent	Percent of Respondents
Online learning (e-learning, remote training, webinars)	1996	21.1	59.5
On-site in-service/classes	1959	20.7	58.4
On-site vendor training	1738	18.4	51.8
Off-site conference attendance	1621	17.2	48.3
Vendor-sponsored online learning (e-learning, remote training, webinars)	1290	13.7	38.5
Off-site vendor training	480	5.1	14.3
Academic classes	357	3.8	10.6
Total	9441	100.0	281.4

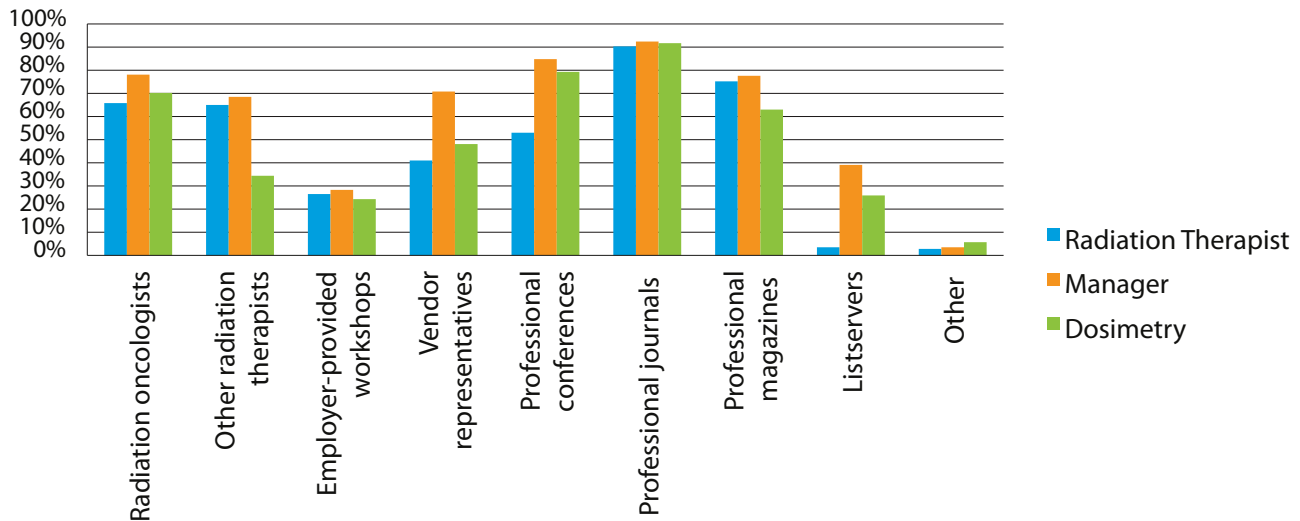
Please indicate if you have participated in any of the following learning events in the past two years.



What sources of information do you use to keep up to date on advances in your discipline?

		Radiation Therapist	Manager	Dosimetry	Total
Radiation oncologists	Count	1381	268	379	2028
	% within	65.8%	78.1%	70.2%	
Other radiation therapists	Count	1363	235	186	1784
	% within	65.0%	68.5%	34.4%	
Employer-provided workshops	Count	556	97	131	784
	% within	26.5%	28.3%	24.3%	
Vendor representatives	Count	860	243	260	1363
	% within	41.0%	70.8%	48.1%	
Professional conferences	Count	1112	291	428	1831
	% within	53.0%	84.8%	79.3%	
Professional journals	Count	1895	317	495	2707
	% within	90.3%	92.4%	91.7%	
Professional magazines	Count	1578	266	340	2184
	% within	75.2%	77.6%	63.0%	
Listservers	Count	73	134	140	347
	% within	3.5%	39.1%	25.9%	
Other	Count	59	12	31	102
	% within	2.8%	3.5%	5.7%	
Total		2098	343	540	2981

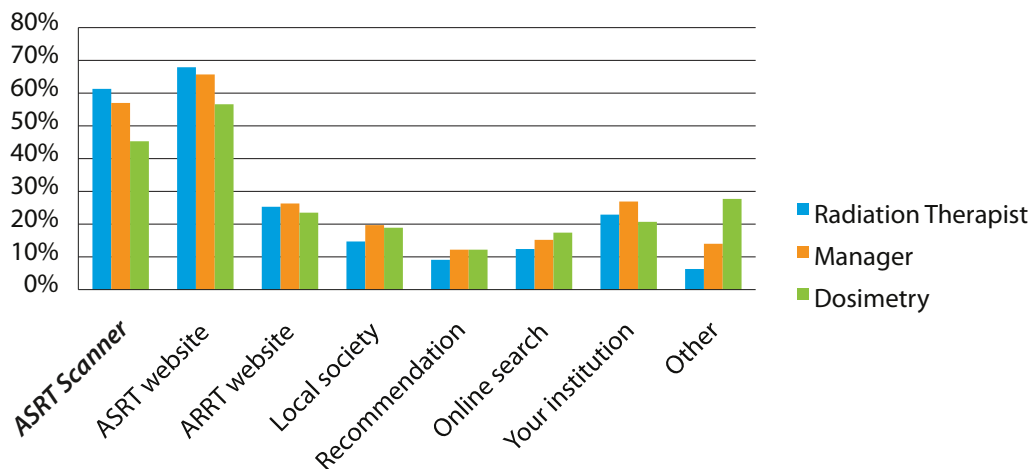
What sources of information do you use to keep up to date on advances in your discipline?



Where do you find available CE opportunities?

		Radiation Therapist	Manager	Dosimetry	Total
ASRT Scanner	Count	1274	191	237	1702
	% within	61.3%	57.0%	45.3%	
ASRT website	Count	1412	220	296	1928
	% within	67.9%	65.7%	56.6%	
ARRT website	Count	527	88	123	738
	% within	25.3%	26.3%	23.5%	
Local society	Count	305	66	99	470
	% within	14.7%	19.7%	18.9%	
Recommendation	Count	189	41	64	294
	% within	9.1%	12.2%	12.2%	
Online search	Count	257	51	91	399
	% within	12.4%	15.2%	17.4%	
Your institution	Count	477	90	108	675
	% within	22.9%	26.9%	20.7%	
Other	Count	131	47	145	323
	% within	6.3%	14.0%	27.7%	
Total	Count	2079	335	523	2937

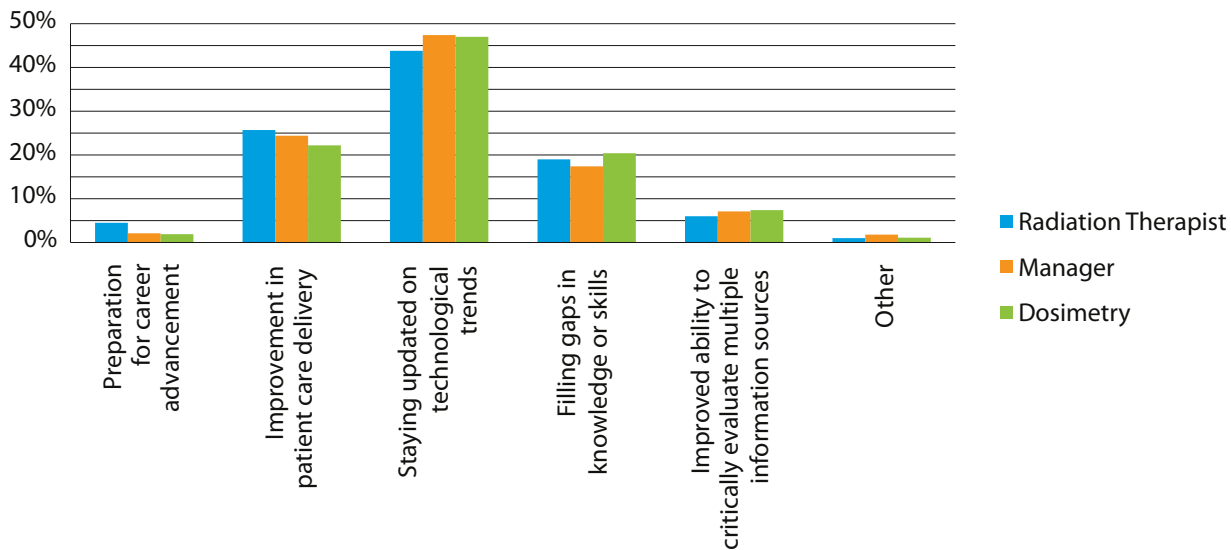
Where do you find available CE opportunities?



Aside from the mandatory nature of CE, what do you primarily hope to gain from CE products?

		Radiation Therapist	Manager	Dosimetry	Total
Preparation for career advancement	Count	94	7	10	111
	% within	4.5%	2.1%	1.9%	3.7%
Improvement in patient care delivery	Count	538	83	120	741
	% within	25.7%	24.4%	22.2%	24.9%
Staying updated on technological trends	Count	916	161	254	1331
	% within	43.8%	47.4%	47.0%	44.8%
Filling gaps in knowledge or skills	Count	398	59	110	567
	% within	19.0%	17.4%	20.4%	19.1%
Improved ability to critically evaluate multiple information sources	Count	125	24	40	189
	% within	6.0%	7.1%	7.4%	6.4%
Other	Count	21	6	6	33
	% within	1.0%	1.8%	1.1%	1.1%
Total	Count	2092	340	540	2972
	% within	100.0%	100.0%	100.0%	100.0%

Aside from the mandatory nature of CE, what do you primarily hope to gain from CE products?



Appendix A. Survey Instruments and Invitation Letter (Please contact ASRT Member Services for a copy.)

Appendix B. Verbatim responses (Please contact ASRT Member Services for a copy.)