

**National Survey on DMP**

**VERBATIM COMMENTS QUESTIONNAIRE on DMP**

**Question 22: Alternatives to DMP**  
**Question 23: additional comments**

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## Verbatim Comments by Faculty to Q22

*Apart from DMP programs, what alternative solutions would you propose to address the number of residencies required to meet the 2014 mandate? What additional steps should be taken to assure adequate residency positions by 2014 such that all qualified students may enter residencies?*

20024012 I am not sure the necessity of resident program. However, I agree that we need to require the graduation from the Medical Physics program to be eligible for to ABR board exam.

20024039 Streamline CAMPEP procedures

20024051 Convince facilities that they can use residents as junior physicists to save on staffing costs...

20024053 The only acceptable option I see would be to increase the number of residency's available. Which would entail increasing the amount of funding available for these residency's, which I don't see happening. Therefore, unfortunately, I don't really see an alternative to the DMP other than not requiring a residency in order to take the exam.

20024054 Pass legislation requiring trained/certified individuals to perform equipment tests and make residents eligible to do so under supervision. Much like med residents then, the hospital may start seeing a financial benefit to having residents rather than hiring more clinical staff.

20024099 Those training programs that have an extensive clinical component should be allowed to count some of the student training time toward the ABR MP residency training requirement.

20024118 See answer below. I think 2014 mandate is very ill-advised.

20024122 The number of residencies will be a problem as there does not appear to be a sufficient source of funding for those residencies. Private medical physics groups, such as mine, are sought as one source of residencies, but it is hard to imagine many devoting their time and resources to training residents who will then be employed by other medical physicists. We may end up looking at new physicists initially being employed as residents rather than junior physicists with the intent of the mentors keeping those "residents" after they have finishing their training. This is similar to the ABR MOC evolving to meet the reality of clinical medical physicists rather than have the physicists evolve to meet the initial, unrealistic MOC requirements.

20024135 For those facilities with clinical residencies (MD rad onc, MD diag radiol) already in place, it would certainly help convince hospital leadership to support a med phys residency if funding would be provided by CMS like it is for the other clinical residencies. Obviously, slots for med phys residents should not replace those for rad oncs and diag radiols otherwise this would not work. Is it possible for AAPM to lobby the necessary groups to help get CMS funding for our residents? I believe that the best residencies will be located at larger facilities where our clinical colleagues are already being trained, because much of the scholastic infrastructure is already in place. At our facility we have 6 rad onc residency slots, and we certainly could train more than the 2 med phys residents we currently have if I had additional funding.

20024142 1. Provide Residencies to those Medical Physics faculty members who got research experience in the field but no clinical experience. 2. During the 5 years Ph.D. program, an

internship should be offered to every student. That internship should contain two consecutive years of clinical training and that'll serve as an alternative to residency

20024206 It seems that what do we need is the clinical training. Can ABR board certified people as a group to train the students too to allow them to take the ABR exam?

20024403 Encourage cooperative residencies at hospitals associated with non CAMPEP programs, that have ABR boarded physicists willing to help "train" newbies clinically.

20024404 DMP without much guided research in general will degrade the merit of a PhD (doctor. Just Clinical Residency is not enough for a PhD. Much deep research skills are necessary for a PhD. PhD is not the same as MD. Using MD as a model to create a Clinical Doctor of Medical Physics in my opinion will cheapen the merit of a PhD Medical Physicist. I am personally oppose to create such a category.

20025267 The putative 'clinical doctorate' would not seem to be much more than a couple of years of additional training post-masters. A masters from a CAMPEP accredited department should be sufficient to enter into a residency position.

20025268 More hospitals need to commit to residency training programs. Positions can be justified based on the productivity of the resident, particularly in their second year. Funding or partial funding through the CMS route needs to be more aggressively pursued.

20025269 I think we need federally funded residencies like the ones the MD residents have

20025277 Additional funding for hub and spoke programs, where by the central programs can participate easier in the setting up of these programs. A huge government spending bill just went out so why doesn't the medical physics community try to get a seat at this trough. I do think that the CARE bill passing may help. Passage of this bill could provide the stimulus for hospital/program administration to be "gently guided" into having to pursue these types of training programs. Currently, very few administrative groups see the immediate benefit to the expense of a clinical medical physics residency. Ultimately, these are the people that need the convincing as most medical physicists support the 2014 initiative.

20026280 Drastically increasing residency positions through additional funding sources (i.e. CMS or alike). Offering residency to those with MS degrees.

20026281 Online training programs to provide core didactic components of a residency, with clinical competency training provided by individual sites. This would allow centers that currently can't provide a residency because of didactic concerns the opportunity to be able to provide good residency training.

20026286 There is an urgent need for the creation of medical physics residency programs non-affiliated with academic programs, but which programs are capable and willing to become CAMPEP accredited.

20026296 More structured on the job training following residency guidelines.

20026297 increase funding to CAMPEP accredited programs

20026304 encourage more CAMPEP programs with more funding

- 20034002 State funding, Hospital/University should fund Medical Physics Residencies just like they do for Physicians.
- 20034018 Require residency programs for a graduate program to become certified.
- 20034025 The DMP program does not address the number of required residencies. A residency should be a employee-employer relationship. These must be established independent of whether Ph.D.'s or M.S. graduates are entering residencies. So it isn't clear why anyone thinks a DMP solves residency shortage problems, unless they are planning to engage in slave labor. Hub and spoke centers are the only thing that will help set up adequate numbers of residencies, where the hub center carries the responsibility of CAMPEP accreditation.
- 20034028 Reverse adoption of the 2014 ABR mandate.
- 20034029 a certification process to demonstrate that an individual has taken a core set of courses in an accredited program could be useful. That would permit individuals to continue coming in from other areas of physics. it would be a shame if that career path were to become unavailable.
- 20034060 making residencies required to sit for the board will in itself motivate the creation of new residency programs
- 20034066 Keep the MS and residency-- increase numbers, ask student to pay just as if this is MBA, fund only those you can afford based on merit of applicant.
- 20034074 I think it's unlikely that even with alternative solutions, we can create enough residency positions by 2014. But every effort should be made, include "distributed" or "satellite" programs, in which resident positions are created at small or distant centers that have a relationship with a larger academic center. Distance learning technologies should be explored to see if they can be used in some cases.
- 20034077 Eventually, professional doctorate will be the only path towards clinical certification. Residencies will be for advanced, specialized training, such as proton physics, or brachytherapy.
- 20034082 better reimbursement from medicare for medical physics procedures so we can use money to get more residents
- 20034089 Work with institutions to establish new programs at various research and clinical hospitals
- 20034091 Increase post-doc and residency programs to train out of field physicists with ties to universities to complete ABR requirements.
- 20034114 Allow clinical institutions outside of the accredited universities to partner with them and allow the students to fulfill their residency at these sites.
- 20034130 Residency programs should increase - Forget the DMP, which only degrades everything.
- 20034133 With increased centralizing of MP resources, is there a need for more residencies?

20034134 The 2014 "mandate" appears to be completely arbitrary and truly self-serving rather than field-preserving or performance enhancing. Rather than water down a PhD degree with this so-called "doctorate," develop new ways to entice and (re)train qualified PhD professionals (from Medical Physics, Physics, Biomedical Physics and Biomedical Engineering-type graduate fields) to work in the field. Look at all those people who are today at the helm: they could do it, so why wouldn't the next crop of highly educated clinical medical physicists? Spend more time and organization on a residency re-training program rather than a watered down degree (that a fraction of individuals will go around calling a "Physics PhD").

20034140 Additional funding for physics residencies is a major issue.

20034143 affiliated or distributed residencies

20034156 Do not limit board eligibility to residencies only. Allow board eligibility through campep approved residencies or MS and PhD programs, Thereby preserving the cutting edge research component of our field. Improved training would be instituted through the campep approval of all 3 avenues.

20034180 Residencies are needed, but I find it nearly impossible that we would have enough residency programs to satisfy the needs for the 2014 mandate. I think that those who graduate with a MS or PhD from a CAMPEP accredited program should be allow to become board registered after spending 2 years working under a certified medical physicist, without necessarily being in a residency program. Even with this change, it will be very difficult to meet the need with residency programs - institutions may be able to take in the required number of students, but the financial resources to pay all these residents will not be available. Either a substantial amount of outside funding will need to be made available to help fund these programs, or the residencies will need to become close to "cost neutral" programs. This means that the resident does not pay any money for courses or training, but also does not receive any money during the residency. This is in fact much easier on the student than a DMP program in which the student pays tuition throughout the 4-5 year process.

20034182 The pressure on the field could be relieved by beefing up the education for Dosimetrist soas to allow for level of junior medical physicists allowed to do QA, DQA'a and oversee HDR treatments under the direction (and responsibility) of a senior medical physicist.

20034187 DMP is not an answer to the residency problem. The solution is to secure more funding for residencies, which will stimulate more available manpower as well. Lobbying for more funding for medical physics residencies is needed.

20034189 As a group we need to lobby/work out the funding (CMS) just like our medical conterpart.

20034190 Encourage and make it easier for all AAPM affiliated institutions to start residency programs.

20034191 Increase residency slots at various academic institutions. Allow post-doctoral fellows, with appropriate exposure to clinical settings, the flexibility to complete clinical training in one year instead of two. Let there be an exam to test their competency after one year of training.

20034192 Question the source of this "mandate".

20034207 Money used to support current masters level students should be used to support residency programs.

20034208 If the problem is that of funding for residencies, then charge all students for MS programs and use that money to fund residencies. Offer CE credits to those who spend time training residents. Drop the 2014 requirements and stick with those of the 2012 policy.

20034218 The number of required residencies cannot be supported by the few qualified institutions able to provide the resources.

20034220 Don't rely entirely on current MS programs to satisfy the residency requirement. Look at partnering non-academic medical physics groups with academic centers to allow residency requirements to be fulfilled in more places. Make sure the residence is truly a residency and not a training. That is, a residency is an apprenticeship that benefits the trainer as much as the trainee, and is therefore useful to both.

20034226 Increase the number of residency programs and expand numbers of performance sites with affiliated degrees. Our institution will begin seeking clinics that would be willing to partner with us. All of the didactic training for a MS and PhD would be done at our institution. Residents would take some introductory short courses at our institution such as patient privacy policy to prepare for the clinical on-site, but most of the clinical training would be done at the affiliates. The affiliates would form a partner networks so that residents could spent time at sites that offered specialized procedures, such as the GammaKnife.

20034249 Don't let ABR define the direction of MP profession

20035260 Have yet to hear any that make sense.

20035264 (1) Here's a band aid: Turn some junior physicist positions into "residencies" (with lower pay) and allow smaller hospitals and consulting firms to "train" them under supervision of at least 1 physicist in the discipline of the residency. The program would need to be registered and affiliated with a nearby CAMPEP approved residency program which would pick up the slack through distance education initiatives and "weekend" work in the form of visiting to view annual tests of equipment not found in the parent hospital. Additionally, the AAPM, chapters and RSNA could become another source of didactic resident education with modules to listen to and finish. (2) Even less attractive ... require all "able" CAMPEP programs to provide residency level clinical training of their graduates prior to graduation until enough residency programs exist to fill the gap. Basically, artificially extend the amount of course work required to complete a PhD or MS. These programs could farm the clinical work out to remote hospitals, centers and consulting firms of their choice. Benefit is that students could still get financial assistance and potentially, remote hospitals and consulting firms would be willing to pay a stipend (i.e., similar to option 1, but the student hasn't graduated). This basically makes everything a DMP without the name change.

20035271 Should have post-doc training, or related clinic exposure (experience).

20035274 CLINICAL: 2 year medical physics didactic courses to achieve Masters in Medical Physics and eligible to take Part I of ABR exam. 2 year residency training on the job to gain eligibility for ABR Part II. Such a program provides 2 years didactic + 2 years clinical training. Funding needed only for 2 years of training. Suitable training for professional medical physicist. Such people should not be eligible for NIH grants since they do not have any formal training in research. if interested in research or "doctoral" title go do research for 2-3 years and earn PhD. RESEARCH: 3 years didactic courses +

2-3 years dissertation research for PhD in Medical Physics. Funding needed for 3 years of training since research will be supported by research grants. Suitable training for academic medical physicist. No clinical training component. Eligible only for ABR Part I. Eligible for NIH grants. If interested in clinical medical physics go do a residency.

20035278        What about a terminal master's degree in medical physics from a CAMPEP-approved program, with a research project requirement rather than a thesis, followed by two years of employment in clinical practice as a temporarily licensed medical physicist mentored by a qualified, board-certified, licensed and practicing medical physicist? As long as requirements set forth by the ABR for such an arrangement to qualify to sit for the board examination are met, this could be an alternative to having to enter a formal 2-year residency program. This might be one way of increasing the supply of currently practicing medical physicists qualified to "teach" the clinical practice part. This might also help resolve the shortage of clinical medical physicists in sooner, as well as, be attractive to some students as an efficient "two years to a job" route. In my opinion, there have been and still are quite a number of MS physicists (some with degrees in fields other than medical physics) who have successfully transitioned right out of graduate school and into a clinical job, and have been able to practice at a high level of competency and subsequently pass a board exam.

## Verbatim Comments by Directors to Q22

*Apart from DMP programs, what alternative solutions would you propose to address the number of residencies required to meet the 2014 mandate? What additional steps should be taken to assure adequate residency positions by 2014 such that all qualified students may enter residencies?*

20040066      1. Combined PhD and residency training with funding for residency component provided by student loans. 2. Exploring means by which residency training can be recognized as an educational program (given a degree title other than doctorate - to be pursued at the completing of MS or PhD), eligible for student loans, effectively students/residents being self funded without having to pay tuition. Any reimb. from the CMS can be used to off set the cost to the institution in addition to getting access to a "free" resident.

20040067      Encourage institutions to establish residency programs if qualified Encourage institutions to develop hub and spoke residency programs

20040070      Increase financial subsidies for residency programs. It's not just a matter of paying stipends for residents, but also providing financial incentives for clinical faculty. This sort of clinical training is very time consuming.

20040074      Associated residency programs

20040075      1. Reduce the teacher to resident ratio requirement from 2:1 to 1:1 plus 1 for the program director. 2. Change the model of the residency program from institutions paying residents to residents paying for clinical classes and paying tuition. The reason-there is not the same level of financial support as there is for medical residency positions. The total amount of money required for a two year residency program to produce 200 training people per year would require 400 people in training. At the current compensation of \$45000 + 12000 benefits per student per year, that amounts to about \$23M per year using our current model. This would be coming from department revenue in most cases.

20040076      Associate residencies in community hospitals with academic centers to add capacity for training find government support for costs of residency training

20040077      both therapy and imaging need to convert on the job training of individuals with limited clinical experience into accredited residency training (TG133 models)

20040079      Increase funding for residency positions Allow M.Sc. graduates to enter such programs (reserve a few spots?)

20040081      Increase the number of PhD and residency medical physics degree programs

20040082      Affiliated Residency Programs. On line remote MS programs in medical physics.

20040084      Structured mentoring by board certified and experienced medical physicists

20040086      Support for CAMPEP to increase rate of review of residency programs seeking accreditation. CAMPEP support of accreditation for "affiliate" residency programs.

20047021 There needs to be more DIRECT communication by the AAPM with training program directors. Information about how to form residencies must be made more accessible.

20047023 The DMP degree is essentially the MS degree followed by a 2-year residency. If MS students were competitive for residencies then the DMP would not be needed, assuming that there were enough residencies. Creating more residency positions and specifying a quota for both PhD and MS students to be accepted in them would alleviate the problem - easier said than done.

20047026 With the current state of the economy and the health care industry, our institution may eliminate the medical physics residency program (even though the program has been in existence for many years and we are already in the middle of the CAMPEP accreditation process). The reason for potential elimination of the program is purely financial: 1) The institution does not want to spend \$45k + benefits on medical physics resident salaries 2.) The teaching time spent by the faculty physicists takes time away from the clinic and 3.) The institution does not want to hire additional faculty physicists. The DMP is not an option at many institutions, which are seeking to decrease the number of programs because of the current government shortfalls. Another option would be to charge tuition for the residency programs, which would resolve the problems at our institution (and I suspect many other). Unfortunately, this would adversely impact the number of people entering the field.

20047036 Expand the research climate - if small programs like ours can fully fund 12 full time graduate students on research grants, I think it is intolerable to seek medical resident like support just so that others who can't or don't choose to get research funds can have money for students. The field needs to stay intellectually alive and further itself...this, plus the physicists' reputation, is enhanced by scientific progress.

20047041 Make it administratively easier to set up a residency program

20047042 An applicant can be accepted into the second two years of a DMP if they are a prior MS or PhD with adequate didactic training specifically in medical physics.

20047047 Bodies associated with the requirement should fund it: ABR, hospitals, gov't, etc.

20048053 The number of Medical Physicists to be trained each year should be about the same with the number of radiation Oncologists( about 150/year).The DMP program will add more confusion to the field and will work against us long term. Medical Physics training should be MS and PhD path followed by 2 years of Clinical Physics training. All the above together with competitive residency program admission will mirror the MDs training and increase the quality of the individuals entering the field, maintain the core research education and bring new energy to the field from people who worked hard and long enough

20048054 There must be a strong push to develop affiliated residency positions in the community hospitals and clinics. Only this can meet the short term needs. The DMP is a solid solution, but is only a long-term solution (10-15 years). The 2012/2014 rules SHOULD NOT be pushed back. The profession needs to meet the challenge now to assure properly trained physicists are protecting the interests of patients.

20048055 The 2014 mandate requires residency training. If we can establish enough DMP programs to meet the needs for qualified medical physicists, we can establish enough residency programs to meet the needs for clinically training MS and Ph.D. students after their graduation. DMP does not meet the needs. It is just a compromise. Proper residency training is the way to go.

- 20048059 More government funding. Distributed residency programs for M.S. physicists spread over about 4 years.
- 20048061 It can't be done. Especially in the current economic downturn, new residency programs won't be started and current programs are unlikely to have enough funds to add positions. An extension of the deadline is needed.
- 20059003 Lobby Congress for federal funding for post-doctoral medical physics clinical training. I think this is even more important than trying to licensure passed right now.
- 20059007 Let the students finish their MSc and then pursue a residency (perhaps accept lesser salary) and pass the board exams.
- 20059010 Work to increase the number of traditional residencies. Consider starting 2-year tuition paying residencies for MS graduates.
- 20059011 Residency requirements and DMP programs are separate issues. I say delay the so-called mandate.
- 20059015 We should work to increase the number of hub and spoke arrangements. Also, questions on DMP are currently useless unless one first defines what a DMP entails. There are discussions from some groups that DMP are just two years (like a MS) with two years of clinical other say also four years but more than MS plus two years clinical. And then others are saying DMP needs research within the four years. and then others are saying DMP needs research and making it six years. There are all very different programs. So one cannot comment on just "DMP" without knowing the proposed implementation of DMP. This part of the survey is premature.
- 20059017 Great question and I don't have solutions. I am very concerned about number of residency programs for therapy. As far as I can tell, the number of residency program slots approximately equals the number of PhD graduates from CAMPEP programs. This puts MS students at a great disadvantage. Not sure what the role of MS students will be UNLESS there is a DMP program or the number of residency slots increased. AND the situation for DIAGNOSTIC or NUCLEAR MEDICINE PHYSICS is even worse. As far as I can tell, there are only two Diagnostic Residencies in North America. Board Certified Diagnostic or Nuclear Medical Physicists will soon become extinct!
- 20059019 (1) Change the 2:1 clinical physicist to resident ratio to 1:1, which is the ratio required for radiation oncology MD residents. (2) Decrease the number of didactic programs, which are currently producing twice the number of graduates projected to be needed in future years. (3) Realize that there will NOT be enough residencies available by 2012 to service the 2014 demand, and deal with that reality.
- 20059020 Organizations that require clinical staff should fund clinical residencies. In my division of some 15 clinical physicists we have 2 permanently funded residency positions and are attempting to get a third in place. This more than meets our need and we are a net exporter of trained medical physicists.

### Verbatim Comments from Faculty to Q23

*We welcome your comments, ideas and suggestions, regarding the 2014 ABR policy, residency training, DMP degree, funding solutions, and the anticipated effects of such policy decisions for individuals as well as for the profession.*

20024017 I feel the ABR policy is misconceived given the current (and projected) availability of residency programs, particularly in diagnostic radiological and nuclear medical physics. Evidence of "on the job" training following completion of an accredited MP program should be a sufficient credential as an alternate pathway to take the exam. We will probably end up with more non-certified physicists working in hospitals and a shortage in states with licensure that requires certification - at least until we can catch up with the demand for residency programs. I also feel the DMP degree would reduce the number of Medical Physicists pursuing the PHD degree and the ability to do clinically relevant scientific research.

20024039 I believe the DMP degree is at best a watered down, and a worst a "Paper" degree which will not make any improvement in our relations with MD's and hospital administrations.

20024054 It is silly to require residency training when there is not a system in place to train significant numbers of residents.

20024118 My suggestion is to go back to ABR and ask them to move the 2014 deadline forward by 5 years. During this time, AAPM, CAMPEP, and other concerned entities should work to secure a substantial bolus of CMMS and other government funding to support salaried post-graduate residency programs. The requirement for these positions should be an MS/PhD degree in physics or medical physics. Trying to "force" structured residency ABR eligibility requirement on the community by an arbitrary date when residency programs and resources for same are so clearly lacking is a bad idea. The idea of a trainee-funded program is ill-conceived: I think it will drive bright applicants into other fields and will harm research-oriented medical physics programs.

20024122 I view the DMP as a step backwards from the Ph.D. The Ph.D. degree is quite well-known and confers a status which I believe the DMP will not have. The DMP will join other doctoral degrees such as DC, DVM, and DO. It will not be the equivalent of an MD, as some hope, but it will not be the equivalent of a Ph.D., which we now have.

20024142 1. Contact all Medical Physics faculty members in various Universities in US and give them the opportunity to complete a two year residency training.

20024206 There is a risk the policy will affect the research in this field. Also, there may not be enough residents and DMPs to fit into the positions. Then we have to switch it back as before.

20024404 AAPM probably should not attempt to pursue institutions to award such a degree. Using MD training as an example to award a DMP degree with Clinical Residency after some postgraduate course works is a mistake that will lead to cheapening the value of a PhD physicist, who typically has to devote a major fraction of his/her graduate study to basic research which leads to a thesis. Clinical Residency (which may be right for MDs) is not the same as thesis-resulting basic research. In medicine, MD/PhD are for MDs which devote their time to some basic research (although much lighter in content than most of that in Basic Sciences). I think DMP will only generate physicists that are NOT stronger than MDs in the basic research or basic knowledge in Medical Physics. That is not good for Medical Physics as a professional. We typically pride ourselves in that we have more basic science training,

which include at least a very "deep" thesis-resulting training that trains us to be able to solve many of the clinical medical physics problems. AAPM could accept the 2014 ABR policy without creating such as DMP degree. There is nothing wrong with requiring MS medical physicist to do residency before they can assume full clinical capacity.

20025267 Right now, we are in the enviable position of having a number of non-medical PhD physicists interested in making the transition to medical physics. These very smart, hard working scientists should not be dissuaded from entering our profession. They should have to undergo additional training, but that should not be a major impediment for them. A 'Clinical Doctorate' would have the effect of diminishing the achievement of earning a true doctorate.

20025268 It is not clear that introducing DMP degrees will help the ABR problem. If the same teacher (ABR/ABMP certified physicist) to resident ratio as is currently required by CAMPEP is maintained (2:1), then this will severely limit the number of students in any DMP program. There will have to be a large number of DMP programs to meet the 2014 ABR requirements just as difficult as creating sufficient residency programs. Also with severe limitations on the number of students in the program institutions will lose interest because of the economics of running small programs. I think it would be wrong for CAMPEP to relax the 2:1 teacher to resident ratio as this would compromise the quality of the training. The only advantage of the DMP is that it will solve the money problem the student will have to pay. In the current economic situation this level of commitment from a student may not be forthcoming. I personally do not see this aspect of DMP programs as being a great enough advantage to out weigh the disadvantages. I do not believe it will bring the profession any greater respect, in fact i think quite the opposite, we will be classed with other professional degrees, such as Physical Therapy, which frankly do not require the academic rigor of a Medical Physics degree (MS or Ph.D.). To me a MS or PH.D in physics or medical physics followed by an appropriate residency program has much more stature than the DMP. The other concern is the adverse effect it may have on entry in to medical physics Ph.D. programs.

20025277 To be honest I do think that there will need to be an extension of this deadline due to the inherent bureaucracy of the setting up programs and the lack of movement on the issue until the last two years by the leadership of the AAPM and ABR. I hope I am proven wrong but my gut tells me differently. As for the DMP degree, at first I was in favor of the degrees but after hearing the debate at the last AAPM meeting and the educational symposium I know STRONGLY oppose them. I do not think that we lack the degree methodology but it is true that clinical training is the problem. The addition of a DMP would not improve the situation because the administrative and supervision requirements would remain the same for groups conducting these types of programs. Also, if an institution can not support more than two residents (both financially and administratively), DMP students would not reduce the administrative needs but only the financial. Additionally, further graduation of degrees would negatively impact the profession as a whole. I strongly support the pursuit of the 2014 initiative and strongly oppose the DMP degree and suggest that AAPM policy makers do as well.

20026280 It may be needed for the ABR to delay implementation of this or help with funding training programs. What ABR is doing is essentially imposing a mandate without considering how it can be implemented.

20026289 If DMP degrees are awarded as professional degrees, in addition to an MS or PhD, then it will be a useful indicator of training qualifications. It should not be awarded as an alternative degree. Awardees would be designated as Joe Smith MS, DMP or Joe Smith Ph.D., DMP, just as MBA's or other professional degrees are designated. In this way research pathways would not be adversely affected, simply complemented.

20026296 I think the DMP is a great idea. Graduating from a CAMPEP MS program, I would have stayed another year to complete additional clinical training for a DMP. My personal concern now would be as an MS physicist, passing part 1 in 2008, I fear being an outcast MS in a field of PhDs and DMPs with no chance for professional respect.

20034023 As someone on the medical imaging research (MRI) side with no involvement in the more traditional medical physics program, I think this is a great idea. There's a huge need for a "professional doctorate" in medical physics. As it is now, individuals who are studying med physics want to become practicing medical physicists in a patient care role must go through the PhD program, where they're forced to do research that has little relevancy for their later career. This wastes the time of everyone involved - while they might turn out some useful research during their PhD study, they don't continue to a postdoc and contribute anything back to the field in the long run, and they typically resent having to work so hard on something that won't benefit them. Students who want to be practicing medical physicists pollute the applicant pool when looking for students, making it difficult to find the people truly interested in research. From the other side, students who apply to med physics because they want to do imaging research are forced to take many classes in radiotherapy and other topics that are not relevant to research, when we'd prefer they take imaging/engineering/physics/CS/DSP related classes. It's a big enough issue that I personally strongly advocate hiring students from BME (biomedical engineering) or ece (electrical and computer engineering) whenever possible, so their academic course program better overlaps their research interests. When students apply through both BME and MP, I always recommend they go with BME, as the course options are far more flexible and useful from an imaging standpoint. Sometimes I even think the entire imaging research group (MRI at least, I don't know about CT/PET/other technologies) belongs in BME or ECE, instead of in MP. Physicians aren't required to get a PhD in medicine to practice, pharmacists have the PharmD, lawyers get a JD, etc..., There's tons of precedence for these professional degrees and I really think they're a good thing, as they separate out the tracts - people interested in doing research and furthering the field can focus on that, while people interested in learning the practice can be taught more effectively without diluting their focus by forcing them to do research.

20034028 In my opinion, adoption of the 2014 ABR mandate was foolish and should be reversed.

20034066 DMP is a bad idea. We will fall behind once less Ph.D.s will enroll, compared to other countries. DMP is not a Ph.D. do not call it "Doctorate", if you want to combine MS and residency, that is fine but called is MS with residency, as simple as that.

20034074 The 2012 and 2014 requirements will benefit the profession and raise the stature of medical physicists. The quality of training and preparation for the ABR exams must be improved, and these requirements will stimulate the necessary improvements.

20034082 DMP is not a good idea. In the medical field, there is no PhD in medicine so you will further stratify medical physics: 1. PhD 2. DMP 3. MS and the role of MS and PhD in clinical physics will become unclear

20034091 The DMP is going to lower the standards for doctoral equivalency. Our profession has a strong component of research to keep it vital, by allowing lower studies and non-research based studies to rise to an "honorary" doctor degree we cheapen the research achieved title and validate that being clinical is sufficient. This is the wrong attitude. We should be encouraging the best from other fields to join our ranks, not raise those who are inadequate to fill slots.

20034114 I am not sure that establishing DMP programs will assist in completing the residency requirements unless it is thru establishment of programs at universities which do not already have medical physics programs.

20034130 Increase the funding - ABR for residencies

20034133 MS are entirely qualified and on target for 95% of what MPs do. Despite many PhDs, very few MPs (and MDs) perform what would be called research in standard academic settings. Creating a DMP title might simply confuse things further w/o any real objective gain about the core function of the discipline.

20034140 What are the essential services provided by radiation oncology physicists as opposed to those physics services that can be supplied by less qualified physicists who are supervised by a fully credentialed medical physicist?

20034143 I believe we should not put all our eggs in one funding basket. It is good to have a mix such as residencies paid for by the institutions, DMP that are tuition funded, and distributed residencies funded by the smaller hospital or private practice.

20034178 I think the idea of a clinical doctorate is bad. It dilutes and degrades the meaning of a Ph.D. I know there are other fields that such a designation, but you get clinical doctorates "maskerading" as a Ph.D. In the computer science dept at our Univ., they have something called a professional masters. That may be more appropriate in our situation.

20034189 It's a good policy in an ideal world, but impractical. Every year some 120 physicist passes the ABR therapeutic part. Assuming that all CAMPEP accredited residents are really good and the pass rate is 100%, we need to have 240 enrolled residents (assuming 2 year program) in this nation. Which means 120+ CAMPEP accredited programs. I doubt that would happen by 2014. And the policy date will be shifted. And there will be Medicare cuts. And then number of residents will decrease.

20034191 1. It will be difficult for most administrators and physicians in the field to make a distinction between Dr. X with a Professional Doctorate and Dr. Y with a PhD. It will likely dilute the value of our PhD programs and damage them. 2. Professional Doctorate will reduce the stature of physicists and reduce our academic standing with the MDs and administrators who make decisions. 3. It will reduce the number PhDs entering the field. It will make unattractive to, and reduce the influx of, individuals from other disciplines into medical physics. Such individuals enter our field and make creative contributions to advance the state of the art. 4. We will loose our leadership in research and development to other countries (e.g., Canada, European countries which are not constrained by 2012 rules). 5. What would we do about the large number of existing MS degree holders who have long experiences? Do we award doctorate to all of them? The answer from Professional Doctorate proponents has been that "We'll get back to ya." 6. It takes probably less effort to train those with PhDs than those with MS degree since the PhD degree holder (whether in medical physics or in pure physics + post-doctoral fellowship and remedial courses as necessary) would have had greater in-depth exposure to fundamental principles as well as various technologies. Furthermore, the latter may be more useful in the clinic than the former during their training. If we must award a doctorate in medical physics, let it be at least a 6 year program – 4 years didactic and 2 years training. Considering the increased complexity of the field, this is warranted. 7. Proponents of professional degree or professional doctorate have insisted that this path is necessary because of the difficulties of raising funds for training and this path will be self sustaining since the trainees will pay for it. Assuming that one faulty FTE is required to provide training to four trainees, the conservatively estimated cost of training will be \$150K per trainee over the two years of training. In addition, the trainee must pay the tuition for the MS didactic courses

for the first two years plus the self-borne cost of boarding and lodging. This may not be viable. If all or substantial fraction of funding for Professional Doctorate program is to come from institutional, state or federal resources, then such resources might as well be used for traditional training programs directed to training PhDs.

20034192        The ABR policy for 2014 is an unfortunate swing that will drive medical physics away from its roots in basic physics, and align it as radiology's lackey.

20034205        I support the adoption of DMP programs.

20034207        I see a DMP as a MS + residency. This already exists and is an excellent route for a clinical physicist. PhD physicists can also do a residency if they want to work in the clinic, and many will do so and seek a research/clinical appointment at a University.

20034208        The DMP program looks well poised to create far more problems than it might solve. As I understand the proposal, the DMP program would essentially allow a student to "purchase" an extra degree because he or she pays for four years of didactic and clinical training, when his or her counterpart who completed a two year MS program and then a two year residency would receive no such degree. No retroactive title has been proposed for those who have already gone through such training. Also, the title of "doctor" that is conferred is, to me, a disservice to those who have proven their ability to think and work independently through earning their PhD, yet still wish to be actively involved in clinical treatments so that when they are involved in research their work will be both pertinent and relevant. I feel that the 2012 policy for graduation from either a CAMPEP approved degree program or a CAMPEP approved residency is far more reasonable than the 2014 policy, since the former supports both the students who choose Medical Physics as their first graduate degree and those who come from other programs such as Physics. The current ABR requirement for clinical training prior to board examination should be quite sufficient for students coming from either CAMPEP program path. Changing the regulations to recognize solely the residencies detracts greatly from the education gained at the CAMPEP approved degree programs and leaves little incentive for other academic programs to seek accreditation.

20034220        If DMP is the only way to solve the 2014 ABR policy, then the policy itself should be revisited.

20034222        The main problem with the clinical doctorate is the name. This is not equivalent to a PhD, nor is it equivalent to a medical degree with a subsequent residency. I believe that many MS physicists are among the best clinical physicists in our profession, and I support them receiving the respect they deserve. I also support residency-type clinical training for MS students. However, this should not earn them the title of "doctor". This will confuse our physician colleagues and imply a degree of research training that a MS degree cannot provide. In short, a DMP is not equivalent to a PhD and should not have the same rank.

20035258        I support creating the Doctorate in Medical Physics program. It will be important to define what level of clinical experience will enable current medical physicists with MS degrees to be granted DMP degrees. I do not believe that all MS physicists should be grandfathered in. But MS physicists who have extensive clinical and teaching experience and who may be providing clinical training within the DMP programs should be awarded a DMP degree, in my opinion.

20035274        One of the problems presently in our field is that the graduate level programs are fairly comprehensive providing both didactic and some clinical experience. Simplify the training of masters students to classroom only and make residency training clinic based only. I suspect many programs may

be able to accommodate MS and residents under such a mechanism. Please do not confer on people who have done no research or published a single manuscript "doctoral" degrees. It does not matter if other fields do it. Let us as physicists not make the same ignorant mistake.

20035278 I foresee two impediments. The first is the supply of medical physicists qualified to teach clinical medical physics, both didactically as well as physics and clinical laboratories, given the residency requirement of the DMP degree program. The primary program "laboratory" will be the clinic, and thus in my opinion qualified faculty must be practitioners of medical physics and not just academicians. (I am personally opposed to the "those who cannot do, teach" approach in the case of medical physics.) The second is the infrastructure needed for the residency requirement. There is a potential for hospitals supporting DMP programs to be inundated with residents, all needing clinical experience in a myriad of therapy, diagnostic and nuclear medicine practice areas. This implies adequate clinical facilities and personnel to carry out this mandate.

### Verbatim comments from directors to Q23

*We welcome your comments, ideas and suggestions, regarding the 2014 ABR policy, residency training, DMP degree, funding solutions, and the anticipated effects of such policy decisions for individuals as well as for the profession.*

20040066        The 2014 mandate should define eligibility in terms of BOTH CAMPEP-approved residency AND graduate program. We do not want to improve clinical training at the expense of didactic training.

20040067        The answers above pertain to the Medical College of Wisconsin. I could also fill out a questionnaire for the Marquette University biomedical engineering graduate program if desired.

20040068        As a masters level physicist with 18 years experience and the director of both PhD's and Masters residents, each background brings a different skill set to the clinic and both need direct clinical mentoring. I believe in the need for structured clinical training. And I think it needs to be full two year program. I don't see how a "DMP" is going to help the field...all it will do is create a three tier system in an environment which still has administrative issues with it's current two tier status. Most HR staff has no idea about the purpose of physics or even it's need to be certified. So creating another educational background is not going to help. I think if we/the AAPM support the concept of the 2014 ABR policy, then the physics community needs to not hire anyone who hasn't been through a formal clinical training in medical physics. We should not hire staff that hasn't completed either a CAMPEP education or a two year clinical residency. So there's a hiring shortage for a couple years. Things will catch up, they always do...and as for funding a resident is similar to junior staff. They need training but serve a functional role in the clinic while assisting staff. Every small clinic can be associated with a main campus and have a residency in the spoke and hub scenario.

20040070        I am concerned about the notion of funding DMP programs from student tuition. We are expecting these people to incur a huge amount of debt to get their chance at board certification. I don't believe this is appropriate. Many students are going to choose the PhD research path only because they cannot afford training without a subsidy, not because they are interested in research. I am also concerned about the status of already board-certified MS Physicists. In fairness, some sort of upgrade path must be provided by programs offering the DMP for past graduates who have accomplished equivalent clinical training. The mere fact of board certification should be sufficient evidence that equivalent clinical training has been obtained.

20040076        1. We need to find an increased national voice to promote CMMS funding of medical physics residency training. Perhaps the AAPM and/or the ACMP could do more to promote this concept. 2. DMP programs would likely reduce the influx of Ph.D.s from academic physics, resulting in some reduction of the contribution of physicists to innovation in the field. 3. On the whole, the 2014 ABR policy is a worthy ideal whose attainment remains to be proven.

20040081        If the medical model is to be employed for the medical physics profession and the comparison is to a faculty radiation oncologist/diagnostic radiologist/nuclear medicine physician is to be made, then the conclusion is in favor of 4 years college, 4-5 years PhD (c.f. 4 years for medical school plus 1 year of internship), 2 years of residency (c.f. 4 years medical residency). The DMP model as it stands, essentially combines a 2 years masters degree with a 2 years residency. It eliminates the research component to the detriment of the medical physics profession. The research component (i.e. the PhD

pathway) develops investigational and communication skills of the medical physicist. These are critical components of the skill set that the medical physicist needs to function competently in the clinic. The DMP model, as it stands, essentially reduces the role of the medical physicist to that of a technician. Should this happen, it will indeed be a very sad day for the profession of medical physics

20040084 I believe that we must move forward with it.

20047023 The DMP degree needs to have a 5-person committee and a substantial scholarship project to be a valid degree at the doctoral level. Otherwise, I agree with the suggestion that the DMP degree be named "medical physics practitioner", given its current requirements.

20047041 2014 deadline is unrealistic. Keeping the 2012 requirements meets our training needs. If the govt would fund MP residencies like they do for MD's then it would be possible to meet this requirement.

20047042 It has to be done for the future credibility of the profession. A DMP is the most logical route. The ABMS is requiring all who sit for their member boards to have completed residencies. Therefore all medical physicists must complete residencies. There are some people who come to the ABR oral boards who are woefully unprepared. They don't have a clue as to what and how to study. There are radiologists who flunk their orals, but they don't flunk as badly as some "medical physicist" applicants. This has to be done to increase the average level of competence of medical physicist in this country. As I age, the odds of me needing radiation therapy will continue to go up. I'll want to know that any medical physicist involved in my care is competent.

20047047 Allow more flexibility for the alternate pathways and evaluate the quality in the first few years. In the past, paid on-the-job-training was what most of us experienced. Why not allow continuation of this only under more formal reporting requirements.

20047050 I have been the Director of the Radiological Health Physics program at San Diego State University since 2007. SDSU does not have an hospital affiliated with it. Since taking over as the director, I have established several collaborations with senior medical physicists at the local hospitals. We have just started the CAMPEP accreditation process and are hoping to be accredited by 2010. I am very interested in exploring means to establish a DMP program with formal clinical internships at different clinical locations and possibly, even UCSD. However, I think 2014 may be too early a deadline and many students who are otherwise qualified will not be able to get into accredited programs by 2012 ( in order to make it for the 2014 mandate). It would be important to consider some transition measures for students who are training in informal internships.

20047052 As an strong engineering-based medical/health physics program (housed in the nuclear and biomedical curricula), we have been producing on the average of 2 students each year who have gone on to additional training (either residency or postdoc) or even fulltime employment as a clinical medical physicist. However, we have no plan to seek accreditation or to establish the proposed DMP. Therefore, the 2014 ABR policy will likely hurt the chance for our program to exist because students may not attend our program any more. So I am somewhat concerned by the proposed changes.

20048053 I think that we should rather go with the model from Orthodontics where residents are not paid then with a DMP which brings automatic admission in the clinical training program and moves us behind the standards of MDs. If founding is not available we should consider offering \residency position with institutional support for PhDs only and positions without pay for MS graduates. In this way we would increase the number of positions, the PhDs will get something in exchange for years and

years of graduate studies while the MS graduates would not pay 2 additional years of tuition as the DMP may require.

20048054 Funding is already in place at hundreds of community hospitals and clinics for "jr" physicist positions, which can be replaced with residents. There needs to be a major effort to assist potential mentors with creating residency positions, with forming affiliations, with setting curriculum, and with paperwork and CAMPEP accreditation.

20048059 I will be surprised if there are enough residency programs in 2014 to meet the policy. I think that the residency policy could be detrimental to CAMPEP approved graduate program enrollment - why bother - students may take a few required courses, but not go for the degree.

20059003 I think SDAMPP should start working to develop a matching system for medical physics residents like is currently done in all the medical specialties.

20059007 The ABR policy is fine. The introduction of the DMP would be detrimental to medical physics. Medical physicists with PhD s have been at the forefront of technological advancement, and have been able to introduce these advances into the clinic. The DMP is simply a glorified technical degree, and the recipients would be perceived at glorified technicians. Having supervised about 30 PhDs, and 30 MSc, I know the difference between these two degrees. DMP would be fatal for medical physics, when technologists are now planning to get a MSc/PhDs. DMPs would be competing with these individuals for the status of glorified technician. The basic PhD is still the foundation of medical physics and must remain, and never be replaced in the clinic by some psuedo-doctoral degree, which is what the DMP would be.

20059010 The 2014 policy will make the medical physics profession consistent with other medical disciplines by \*requiring\* a residency for clinical workers, and that may improve our stature. However, it will also likely substantially reduce the overall number of students entering MS programs, and for graduate programs such as ours, that would substantially and negatively affect our program's ability to be financially self-supporting. It may also reduce the number of students who would choose to enter the field, because students may not be willing to pay for 4 years of training. So, overall the 2014 policy may improve our stature and the level of clinical training, but it may be bad financially for graduate programs and may reduce the number of trained medical physicists going forward. Thus, I see the 2014 policy as having both pros and cons.

20059017 While these policies are well intentioned and do provide much needed alignment between medical physics and other board-certified fields, the practical realities of 2014 policy are exceedingly difficult to meet. While some advocate for distributed residencies - actually providing detailed clinical training as well as documenting that training and providing evaluation to the trainee is a very time consuming task that is a lot to ask a practicing medical physicist to take on - especially without additional funding for the faculty. They may be able to take on a trainee for 3 months and some perhaps even 6 months, but I don't think having them take on a trainee for 2 years is very realistic. That said, it is an EXCELLENT idea to have specific clinical training in a structured program for graduate students, DMP students or residents. No one really wants them to do on the job training. From a students' point of view, they may have a passion for research or a passion for clinical work, but they may not know which one of these paths they want to pursue - so many of them would like to keep their options open and NOT have to choose before they finish (or even have to choose when they are applying to graduate programs)

20059020 I am very concerned about the approach being taken. The need to come through accredited programs (Graduate/Residencies) AND write a series of exams seems to me like overkill,

restricts the number of people available to the profession and ultimately waters down the scientific component and diversity of the profession. The value of Imaging and RT Physicists is their physics training which enables them to be flexible problem solvers. We are becoming glorified technicians focused only on radiation Therapy and Clinical Imaging. We need to find ways of encouraging people to enter from other career paths such as engineers, biological physics etc... A DMP (like a MD) is not a true "Doctorate" and these diplomas will not have the same skill set that a medical physicist who has completed a Ph.D. will have. Maybe we should rather be calling this a "Diploma in Medical Physics"

## Verbatim Comments by Students to Question 22

***“Apart from DMP programs, what alternative solutions would you propose to address the number of residencies required to meet the 2014 mandate? What additional steps should be taken to assure adequate residency positions by 2014 such that all qualified students may enter residencies?”***

20001020 The residency requirement is not reasonable and will only degrade the field of Medical Physics and discourage future students from studying Medical Physics.

20001028 "1. Reduce the number of requirements to be met for an institution to become CAMPEP accredited. 2. For the already existing CAMPEP residency programs: a)they should take in more than 2 residents per year. b)should not limit their applicant to only doctoral or post-doctoral. MS students should also have the chance. 3. AAPM /ABR and IAEA should work together in effort to establish CAMPEP residency programs in international countries (other than the US) this way, you don't have all the influx of students from all over the world towards one spot. "

20001049 "Introduce accelerated MS and PhD programs, where students can choose the route that would fit them best. In these programs, all extra classes would count towards residency. Most students would do the same things multiple times by going through a required residency and they would pay a lot more money."

20001088 There needs to be more communication on the part of these programs with places where the graduates would likely go to seek employment. If there were more partnerships and students could get their residency out of the way during school then these problems would all be gone.

20001129 Funding to hospitals offering an acceptable residency program.

20001132 "Some universities include actual clinical experience in the graduate program, which should be considered as contributing to the eligibility to sit for certification exams."

20001149 "CAMPEP just got done making the University of Pennsylvania wait another year for its MMP accreditation, and it still hasn't approved their residency program. I mean what is with these people? Penn Medicine plus Penn Physics should equal instant accreditation. I wonder how many other programs are suffering in the same way. With this residency rule becoming active, their just going to get even more full of themselves. Bottom line, CAMPEP is holding up this process. And now we're giving them more power?!?!?"

20001161 "Students in all programs (CAMPEP, non-CAMPEP) should be exposed to the clinical aspects of medical physics prior to graduation"

20001190 Creating PhD programs in medical physics/biophysics that include the option for training towards accreditation as a medical physicist. Also increase the number of centers where residency and mentorship is available.

20001232 "Should start more residency programs/ can increase number of seats to 2, per residency program."

20001309 "Perhaps CAMPEP should make it a little easier to gain accreditation. Maybe they could take a more 'hands-on' approach to the accreditation process instead of requiring already very busy department chairs or heads to complete extremely lengthy forms in the application process, they should send a representative to assess the overall effectiveness of the program. There are many programs through very reputable academic hospitals and institutions which are not CAMPEP accredited for what I believe to be this very reason. Why are graduates necessary to show that the institution and its faculty are competent enough to produce qualified medical physicists? "

20001350 Hospital based clinical rotations as part of an academic graduate program.

20001359 CAMPEP affiliated community hospital mentorships

20001382 "A graduated system of board eligibility for students from residency programs that enter the accreditation process during or prior to the year 2014 would allow students a broader choice of programs without the fear that their program may not be accredited in time to satisfy the 2014 mandate. This would mean that students graduating from an 'accreditation-pending' residency in 2015 would be grandfathered in to board eligibility, while a student entering Fall of 2014 would be board eligible if he/she chose a program that was nearing completion of accreditation."

20001386 "Open more residency programs, or reduce or eliminate the cost of the DMP program for graduates who already achieved their respective degrees."

20001396 "develop more relationships with hospitals around the country. maybe make it like physical therapy, where students are required to participate in 3-4 rotations in clinics, but they would have to be all around the country since there wouldn't be enough in everyone's own city. "

20001444 "Preferably, cancel the mandate. My proposal is this:

incentivize entering a residency, rather than require one. Students may or may not know that residency graduates have much higher pass rates, but they do know that residents are paid about half (or less) the salary of junior physicists. Do everything possible to secure federal funds for residencies, and ensure that residency graduates can finish certification \*faster\* than those not in residencies. Pay residents more money (there are often ways around institutional caps on medical residency salaries). Encourage residencies to recruit and cater to MS and PhD graduates of medical physics programs, rather than PhD graduates of science and engineering programs as they currently do. Make students aware of these advantages, such that they will \*choose\* to enter residencies. Alternately, postpone the 2014 mandate until federal funding can be secured that will allow the necessary number of new residency positions to be created. If not possible, cancel the mandate."

20001455 "I am happy that there is funding to help different institutions provide residency training programs. Outreach to different areas in clinical practice to provide a more well-rounded residency program through work with many different centers would be appreciated. Being in a MS program with the goal of going directly into the clinical field, I would like to know that there is a network available to supplement the theory and research-based instruction from the university. Clearly the world of RT outside of a large research-based, heavily funded academic institution is bound to be different. A residency program that focuses on this, and the more practical aspects of the field for MS students would be appreciated. More funding for community-based programs?"

20001457 "Just take away the requirement. I think it is that simple. I feel that residencies have their place to train those from other fields, that have a similar background to medical physics, to enter this field. I personally think it is ridiculous to have the requirement on all to receive certification. Just have the clinical training be a requirement for PhD and MS CAMPEP programs. Or make a requirement that those who don't come from a CAMPEP program must complete a residency, but don't make all. I can understand those that want to increase the reputation or perceived caliber of medical Physicist to match those that they work next to: radiation oncologists and other doctors. The perceived notion that an additional 2 years of redundant training will accomplish that is wrong. I'm at a university that has a CAMPEP residency, and not one of the residents that I have seen have come from a medical physics background therefore, their training is not redundant. Also, if you are going to have a medical physicist take an additional 2

of training before they can be certified, for someone with a PhD, that's only two years less of training that Radiation Oncologist receive. I suppose the pay difference is around double between the medical Physicist and Radiation Oncologist. That's fine if we want to start raising salaries for medical Physicists to meet the difference. I'm okay with that, but... WHERE IS THE MONEY GOING TO COME FROM TO PAY FOR IT? Charge the patient's more? Most of them are being treated off medicaid or Medicare, and I'm sure we're not going to get any more money from the government to pay higher rates, nor is any insurance company going to pay higher rates because Medical physicists now feel entitled to it because they're going through more years of making pittance before they first get that real job. Of course that largest factor is patient care. I don't believe that anything additional can be taught outside of new requirements in a MS or PhD program. "

20001494 "At the present time I don't have enough information to comment with authority. However, to make field accessible to all finances would probably dominate any decision made by an interested part. "

20001513 "Well, why should a Clinic/Hospital do a DMP if the clinic in question can just provide a residency?"

20001545 Graduation requirements should be waived when applying for CAMPEP approved graduate program. They should be qualified on performance only.

20001550 Just make more standard residencies that pay residents. I do not understand how you can expect a potential medical physicist to pay for 4 years of school to enter a field with a declining average starting salary and a decreasing number of entry-level job openings. It seems like the DMP programs will do nothing to reduce the saturation of the job market. I think making fewer residencies with pay is more fair to students and will reach a harmony with the job market faster.

20001570 America needs to create more accredited residency positions before 2014. This is the best way to meet the 2014 mandate.

20011008 "I would be interested in seeing a compromise being made. In essence, students could pursue a 3 year masters program and then apply to and get paid for an 12 - 18 month residency. In this way, the burden would be shared amongst all parties and would promote the smoothest transition to providing better training for medical physicists."

20011017 "DMP degrees could be offered through an accredited

institution with allowances for previously acquired experience - i.e. testing to accelerate those individuals that already have experience through the process. This would clear more spots and reduce bureaucracy for people who already have experience. It would also encourage students to seek experience before the deadline, again accelerating the accreditation process and clearing spots faster."

- 20011035 Push the mandate deadline back or remove it altogether. Grant honorary CAMPEP accreditation until all facilities can be inspected more closely.
- 20011040 The deadline for this transition was set at quite an early date and I believe it would have helped if the individuals in charge had set a more realistic date keeping in mind the challenges that many of the institutions would face in providing a residency program. I think a requirement by CAMPEP for all CAMPEP-accredited med phys programs to provide a clinical rotation during their MS degree would be much more useful than a DMP.
- 20011041 "ALL CAMPEP residencies should be required to accept both MS and Ph.D. in medical physics. Also, limiting the number of applicants accepted from other fields such as physics but not eliminating that pathway for people with Phd's in physics, only reducing the number."
- 20011061 Current CAMPEP programs need to incorporate clinical training for their own students.
- 20011068 "I don't think a ""residency"" you have to pay for should be called a ""residency."" In medicine, the last 2 years of medical school training you pay for are ""rotations."" There is a residency after medical school. Clearly, the medical physics community is not conveying the message to hospitals that a medical physics residency program is just as important as a gynecological, surgery, or orthopedic residency programs that train people who are already doctors. Procedures are getting more and more complex and the medical physics community wants to make sure everyone with clinical responsibilities has had the training necessary, just like in medicine. The money is there, but it should be a matter of convincing programs to ""bite the bullet"" as it will to start these programs. I don't think asking students to pay for the training will generate that much revenue, it may even detract people from entering the field altogether."
- 20011071 "Allow general clinics to affiliate with CAMPEP programs to provide two years of clinical training and work experience after completion of a Master degree (or Ph.D. if necessary).

These two years of work would be at a reduced salary from a full Med Physicist and constitute a residency. The standards of the 'residency' would be kept in line with the work-history requirements of the American Board of Radiology for completion of the board exam, and executed at the discretion of the affiliated CAMPEP program. The pay a trainee receives in the work environment offsets the burden of the increased tuition during the two years and reduces burden on CAMPEP programs to produce sufficient clinical time and training for each student."

20011081 "As a student pursuing a PhD in a clinically intense program, I think that some type of credit could be afforded to students that are working in a clinic while earning their originally intended degree. I don't know that these residency positions will do anything for people in my situation, and in fact I see it as a waste of time. If residencies are the way to go, I think there should be some incentive for the clinicians to take on new students. Perhaps giving them credit toward MOC or CMEs could persuade someone with limited time that they could in fact help out the profession and take on a few students at their institution."

20011090 "Instead of requiring ""residency,"" allow 2 years of equivalent work in the field. This might include working as the primary medical physicist at a small hospital, or working in a consulting firm. If I were looking at the field now, and was required to pay to go to school, and then take a residency afterward I would not apply, I would go into biomedical engineering instead. I think creating a separate DMP program will reduce the number of qualified medical physicists. I think this plan will create an academic path with a PhD in medical physics, and a clinical path with the DMP, and people will decline the DMP because of the price, and the PhD graduates will not be appropriately certified."

20011097 Either the amount of admitted students to programs must be reduced or more residency programs need to be created as soon as possible

20011112 "Why would anyone pay 120K\$ for a DMP when they can pay 10% that amount for a PhD, especially when most science PhDs are well funded? And MD and DDS do not cost even half that amount! In addition, a PhD gives the student more flexibility than a DMP. Most clinics are affiliated with universities, who would do research. Research is a huge part of the Med Phys field. Even small clinics can do research and incorporate the results into their daily practice."

- 20011123 Expand or streamline the residency program approval process to allow more residency programs to be approved in time to meet the deadline. Change the financial or other structure of residency programs to allow an approved institution to offer a larger number of residency positions.
- 20011136 More imaging physics residencies
- 20011139 I hope more community hospitals can open up internship or practice opportunities for students and residents.
- 20011146 "Needs to be modeled after how medical doctors do residencies, and they need to be paid residencies."
- 20011151 Create more residency programs or current programs should take more students. Obviously the issue here is funding - who will pay to train these people. Enacting the 2014 mandate should not have happened if they didn't have the cash to back it up.
- 20011154 More openings for CAMPEP accredited residency training.
- 20011157 More residency programs at universities.
- 20011174 Establish private scholarships (e.g. from the AAPM based on donations or excess annual revenue) to increase the number of possible residency slots or to pay for part of the DMP.
- 20011179 "It should be offer more clinical training to PhD and master degree students, without the necessity of creating a DMP program. Show the necessity of medical physicist in imaging, this will create more position in this field."
- 20011180 "DMP program makes sense and I agree it is needed. I would think that over half of the current PhD students in medical physics at my institution do not have a true research/academic career interest and would have rather done a DMP track. Additionally, there is scarcity of research funds, therefore it is often quite a struggle for many of these students to get their dissertation work funded, which is a shame since many are not even truly interested in the research other than as a path towards the clinical practice."
- 20011213 "If the reason for the lack of residency programs is insufficient funds, I think Hospitals/Clinics should sponsor residents for the duration of their residency program. And in return, the residents will agree to work for their sponsoring Hospital/Clinic for the same amount of time as their residency program."
- 20011215 Allow physicists needing a residency to attend a summer

school similar to continuing education in which they can receive the necessary training. Or let physicists come up with their own individual plan for training that can get approved by CAMPEP.

20011216 More residency program. Improve the accreditation process.

20011246 "Training at community cancer centers. Of course the problem with this is the quality of the training. If one could perhaps tie smaller centers with larger regional institutions. I'm not sure how practicing physicists decide on mentoring graduates. Perhaps it is they need some extra manpower, feel the need to give back, or enjoy mentoring. Direct financial contribution is probably unlikely, but maybe the AAPM or ABR can give mentors other incentives such as meeting vouchers or CE credits. If I graduated tomorrow and was accepted to a residency of my liking I would be willing to accept pay at a graduate student stipend level vs postdoc level. I would be hesitant to pay unless it was a very reputable institution. This is because I'm not sure how one guarantees the breadth and depth of my residency training at lesser known venues with less than ideal resources. "

20011248 CAMPEP accredited residency programs could work with local institutions and private clinics who need physics support to generate additional residency positions.

20011256 I believe the current economic crisis that we're experiencing is both a burden and opportunity. In my opinion the 2 best options for addressing the 2014 training requirement are classical residency programs and residency programs done in collaboration with community hospitals and consulting groups. In this economic climate it will be hard to convince students to pay more money and sign-up for 4 years of tuition. Likewise University's are going to be challenged to provide more paid staff positions (both for qualified medical physicists as teachers and lower-paid residents). Private consulting groups and community hospitals that haven't hosted students in the past may/consider view taking on a resident (that is considerably lower costs than a full-time physicists) as a cost-saving method to address increased patient capacity but shrinking margins.

20011263 Students with degrees other than in Medical Physics should not be eligible for residencies. The number of medical physics graduates per year are not more than 300-400. It should not be difficult to create that many residencies.

20011266 "approved residency programs and graduate programs need to reach out to satellite and smaller clinics to set up a

branch type system, where the main institution delegates the requirements of the clinical training components."

20011269 "Affiliate with clinics to offer clinical training with university program, as some CAMPEP approved programs have already done."

20011270 Using 'affiliate' centers to provide a greater breadth of exposure for residency programs would allow smaller centers can contribute to meeting the demand.

20011273 "Tying the residency programs into the current PhD program would be the best way to go in my mind. However, I am not aware of the cost and time to prepare and run one of these programs. "

20011289 "Affiliation of large universities with small private clinics to provide a residency ""light"" for those who want to work in a small private clinic eventually. 3 months of university training per year @ a university, with 9 months @ a private clinic working under an ABR physicist."

20011293 "Community or small hospital networks could change their positions entitled ""Jr. Physicist"" to ""Resident in Medical Physics"". These hospitals could coordinate together for employees to rotate between hospitals to receive training and achieve proficiency in each vital component required for the board exams."

20011294 Mentoring programs with affiliated CAMPEP residency

20011303 Seeking funds from professional organizations such as the AAPM or ASTRO to help provide funding for medical physics residencies.

20011307 "The main problem is funding all of the residents. The only way around this is if congress passes a bill where we receive funding, through government sources, similar to medical residents. Otherwise, it is not feasible."

20011315 "Perhaps copy the way that medical students get residencies. Once the requirement is there and hospitals and other institutions realize what needs to be done to qualify a medical physicists, they will participate and offer a residency position."

20011316 Allow graduates of CAMPEP programs to complete residency programs at non-CAMPEP accredited residency programs or gain certification through work experience in a non-CAMPEP accredited institution.

20011323 "I don't know how, but you're going to have to approve lots

and lots of programs."

- 20011338 "This is a long shot, but the NIH just got a huge boost in the recent stimulus package. If some of this money could go to full subsidizing of medical physics residencies, that could help alleviate the problem."
- 20011342 I think a program such as the one mentioned in the previous questions where institutions that may not have full blown residency programs can affiliate themselves with one.
- 20011349 A greater push for more accredited residency centers.
- 20011354 "As mentioned, have partnerships with hospitals in which two years of training could be received and count as a residency."
- 20011368 "This is obvious- increase the number of residencies available. There are only two CAMPEP residency programs in diagnostic imaging on Earth. That is sickening considering the 2014 initiative. If you want students to pay for their own training rather than participate in research in the field, you don't have to create a new professional title to hide what you're doing. "
- 20011380 "Since residency would only be required for people who want to do clinical work, and people who do clinical work usually make a decent salary after graduating, you could just tack on the residency after the PhD. The overall amount of training required would be comparable to med school."
- 20011384 I think CAMPEP and ABR are on the right track to meeting the numbers of qualified Med. Physicists.
- 20011411 "Having larger institutions become associated with smaller clinics in a way such that a portion of the residency could be at the smaller clinic (e.g. spending the HDR brachy portion of the residency at the smaller clinic, but learning external beam (IMRT etc) at the larger institution). This would open up the number of residents an institution would be able to admit/support. Perhaps approaching university hospitals (which would most likely have many of the different treatment modalities available) with the opportunity to establish themselves as a top institution for physics residents. This could also be in conjunction with establishing a "match"-type system that is used by medical residencies. This could help to create residencies at institutions that already have large radiology/oncology depts that could support training physics residents. Also, perhaps institutions could attempt to get money from the federal government for establishing these training programs. I believe medical residencies get money in this fashion. "

20011420 A modestly paid or non-paid optional residency-like training that can be completed while pursuing a traditional research Ph.D. so that the student is funded mainly through a research project. Universities should work in collaboration with Hospitals in their area to open these positions for their qualified students.

20011425 "Distributed residencies that are inspected regularly by CAMPEP might work. As it is, CAMPEP makes no effort to review existing residency programs for adequate either sufficient didactic training or daily clinical training. For example, multiple residency programs do not have a didactic component beyond pointing new residents to graduate courses offered at the institution. Also, the emphasis of many residency hiring committees has shifted from CAMPEP approved Ph.D.'s and M.S. candidates toward research physicists capable of generating grant money during their residencies doing research."

20011439 "Additional CAMPEP approved sites could be added by asking clinics if they would like to participate in such a residency program, even if they are not an academic center. In terms of funding, I imagine that smaller clinics would not be as open to such an arrangement, but if financial burdens could be taken care of by grants or by offering a small salary for those two years, then most places would take on a resident. Or, even though I wouldn't like this, if a small institution wanted to be a CAMPEP approved residency site, it could require that the resident pay for it. "

20011440 "Especially with the economic downturn, institutions will have to find ways to overcome the economic downside of having a residency program where the residents are paid some sort of salary. As this will no-doubt reduce the number of people who can afford residencies and thus people entering the field, the only solutions would be to rescind the ABR requirement or create revenue-neutral/revenue-generating program that offsets the student's expense with some sort of academic or clinical incentive"

20011443 Definitely find some clinics willing to affiliate themselves with a CAMPEP accredited program.

20011458 "1. Try to have adequate residency positions by accrediting more schools/hospitals with established clinical programs. 2. Do not rush to accredit just for the number sake. Follow the requirements for accreditation. 3. If there can not be sufficient residency positions created for all the qualified students, do not make residency mandatory."

- 20011462 "The spoke and hub model sounds like a feasible plan but we need to make sure it does not require too much commitment from clinical medical physicists. This is not an easy proposal. First, we need to make sure the time commitment is not so much that the clinical physicist is taken away from his normal job possible at the detriment of the patient. On the other hand, there must be enough attention and mentorship to the student. While financial incentives may be provided, it may also be possible for the ABR to take such mentorships as part of their MOC requirements. This would be a win-win for both mentor (clinical physicist) and student.
- 20011466 "Obviously, there needs to be a large increase residencies offered to everyone in the Master's program. It will destroy the clinical Master's Physics occupation because graduates will not be able to work in a clinical setting until they find a residency and complete it. This is very unfair to these students. The solution is going to require a huge change in the clinical situation in many hospitals around the country. Without the development of more residencies the implementation of this policy WILL have to be altered or Master's level physicists will no longer exist. "
- 20011475 Change requirements of current CAMPEP graduate programs to include clinical experience that would count as residency training to help in the transition. Possibly an extra year in the program or shadowing experience in the summer months.
- 20011476 "I think that a more stringent and accelerated residency programs should be established that have a length of one year instead of two. These residencies should be limited to GRADUATES of MEDICAL PHYSICS GRADUATE PROGRAMS, so that the residency can be focused purely on clinical duties, rather than classroom work. The same could be said for the DMP program, which should last one year instead of two. This proposal would automatically double the current number of residency positions."
- 20011483 "Clinical hospitals should provide clinical training. It is in the interest of both community and academic hospitals to provide training for future medical physicists. If the cost of instituting a residency program for physicists was spread out across many institutions, the impact would be minimal for anyone hospital. In a sense, the hospitals would actually be getting a great deal: instead of paying close to 6 figures for a newly minted out of school medical physicist the hospitals would only need to pay the going rate for residents of ~ 45k."
- 20011485 "Allow non-teaching programs (independent clinics, cancer centers etc) to be able to work with graduates of CAMPEP-accredited programs to provide the residency programs

and mentors. The didactic training will have already been taken care of by the CAMPEP degree program, and the residency experience will come from the clinic."

- 20011500 "Encourage existing centers to open more residency positions, possibly using the hub and spoke model to get experience in different areas (although I realize that funding for these positions is a major issue). Limit the number of students from other disciplines from entering medical physics residencies. It doesn't seem fair that medical physics students from CAMPEP-accredited graduate programs are often rejected from residency positions in favor of other physics Ph.D. applicants. Although most of the residency programs assert that students from medical physics graduate programs are preferred, this does not seem to be the case in practice."
- 20011502 All current institutions offering degrees in medical physics should offer a residency as well.
- 20011507 "With the PhD being a clinical-academic degree, one should aim to integrate a clinical component into the existing clear MS or PhD degrees. Adding another non-clear defined degree, which for the general public sounds indistinguishable from existing degrees AND terms the work-levels of DMP and MS similarly, the profession gives itself away to degradation of skill and salary levels. "
- 20011511 "Increase unpaid residency, but still give paid residency priority to PhD students."
- 20011528 "I think that the DMP program is a great idea to solve the shortage of residencies that are going to be needed to meet the demand in 2014. However, there needs to be a way to help offset the cost of paying for 4 years of graduate school, especially when many students have debt from their undergraduate degree."
- 20011548 "I propose a no-cost solution from the supply side. Presently, anyone from physics, EE, biomedical engineering can apply to residencies or post-doc positions (back door approach) - including those without any prior coursework in anatomy/physiology, radiation physics and radiation therapy, radiation safety, etc. This effectively is akin to taking 2 steps backwards, making the 2014 policy work against the intent of the 2012 requirement of graduation from a CAMPEP grad program in medical physics. The 2014 policy should be amended to require graduation from a CAMPEP grad program AND CAMPEP residency. However, in the meantime, while ABR policy is being amended, a no-cost policy solution can be put into effect. Simply, if all CAMPEP program directors would sign an agreement to give residency admissions PRIORITY/PREFERENCE for CAMPEP medical physics graduate

applicants (and CAMPEP should audit whether this agreement is being put into effect), this would reduce the effective numbers of people entering the field from the 'side doors'. Presently, many of the Master's degree students graduating from CAMPEP programs recognize the daunting admissions odds of competing w/ PhDs (with or without medical physics degrees), and so many don't even bother applying to residency programs. Instead, they tend to pursue direct clinical employment, and follow the on-the-job training route. So, while MS students are being produced in larger numbers than PhDs throughout the nation, they effectively have the least access to structured clinical residency training. This 'agreement' costs nothing, is easy to 'audit' by CAMPEP, and would effectively increase access to residency training to 'qualified' CAMPEP graduates."

20011551 Increase the accredited residency programs. The DMP alone will not solve the problem.

20011558 1) Initiate paid residency programs where students pay tuition. 2) Cut masters level physicists and instead use the money to fund residents.

20011562 cut way back the number of MS medical physicists produced each year. We are supplying way beyond demand.

20011566 modify our current MS and PhD programs to include residency asap

20011580 "I purpose that all CAMPEP approved graduate programs offer clinical experience to their students as part of the curriculum and that a M.S would suffice for a residency. This would be different from a DMP in that there would still be the research component. If a PhD is desired then the student continues on, otherwise they would be in a longer lasting M.S. program that requires research but gives them the necessary skills to take the exam."

20011592 "Maybe change the policy from requiring CAMPEP training to sit the second part of the boards, to just having clinical experience. As a current PhD student, I think the requirements will only cheapen my degree."

20011704 "As someone about to receive a MS and faced with going into a residency program or the job market, I am concerned about the limited number of residency programs. In addition to the few number of programs available there is also competition from other students applying with PhDs. The common message I seem to get from clinical people is that a PhD is not necessary for clinical work, yet many of the residencies seem to prefer you have one. Obviously there would have to be more accredited programs by 2014, but I understand that many facilities do not have the requisite

equipment or modalities to become certified. It takes many years and dollars to build new programs. I think a viable solution for the transition period is to create some satellite mentorship program wherein you could do the majority of training at a local hospital and maybe spend one or two months at a different facility where they may have technology unavailable at a local hospital. Standardize the requirements for everyone. If it were on the job training that might appeal to employers if they were able to pay a medical resident level salary."

20011709 Don't set up the rules in such a way that it is impossible to meet them.

20011711 "More opportunities to gain clinical experience during graduate school may help. If individual institutions cannot offer more opportunities, perhaps there can be ""clinical internships,"" where the student would pay to attend and learn a type of treatment or clinical task at any willing institution/company for a month or two. If a student can graduate from a CAMPEP program with a year of clinical experience on top of the automatic year he/she receives for attending a CAMPEP program, he/she would only need one more year of experience. If there were one-year residencies available, this would complete the clinical training for these students. This potentially could open additional slots in current residency programs. "

20011713 Reconsider the mandate. Unfunded mandates are sooo Bush administration.

20011724 "Encourage institutions to open residency programs, there doesn't need to be a whole new Doctor of Medical Physics program to have more residency programs."

20011724 "Encourage institutions to open residency programs, there doesn't need to be a whole new Doctor of Medical Physics program to have more residency programs."

20011728 I think the CAMPEP accredited graduate program should provide an advanced Ph.D. program whereby additional clinical training is provided by the degree granting institution that will fulfill any ABR requirements imposed.

20011731 Lower exam fee

### Verbatim Comments by Students to Question 23

***“We welcome your comments, ideas and suggestion, regarding the 2014 ABR policy, residency training, DMP degree, funding solutions, and the anticipated effects of such policy decisions for individuals as well as for the profession.”***

20001028 "1.I think that DMP is a very good idea yet it will create some kind of a problem. On one hand DMP is suggested to take 4 years, on the other hand a student who completes a 2 year MS program followed by a 2 year residency program would probably have the same knowledge and experience as the DMP graduate but NOT the title! This in turn affects employment position, salary and so forth.. 2. I hold an MS degree in medical physics from a US non-CAMPEP accredited program. I currently am a Ph.D. graduate student who would have applied to a CAMPEP residency if supported by my source of scholarship funding. My local government supports my education tuition but not the residency program as it doesn't lead to an academic degree. If somehow the clinical residency becomes a mandatory part of the degree leading program that will immediately release the pressure on the residency programs to expand to accommodate the 2014 ABR changes. "

20001069 "The DMP degree should result in a residency where the trainee gets paid for their work once they are done with the coursework required for the current MS or PhD. Four years of school with two of that being residency work that students must pay for themselves would drive a lot of people out of the field, unless the reimbursement after schooling was completed would be increase enough to pay off their incurred debt in a reasonable time-frame."

20001088 There are many problems with having a DMP not only would tuition costs skyrocket because instead of a two year program you would need to pay for 4 years at the graduate level but also the MS degrees granted in the years before would become worthless. In addition to the degradation of the MS degrees the ones that hold Phd's would see the value of their degree plummet. I believe the solution is to create more partnerships with the institutions where graduates will seek employment and try and obtain fellowships during school. This would help the student in many ways not only in achieving their residency but also giving them employment during school.

20001129 "DMP sounds like a great idea, wish it would have been around when I was applying to graduate schools."

20001149 "Residency salaries need to be improved. Many students in my program see the fact that they will just barely be exempt

form this rule as a benefit because the residency salaries are less than \$50,000 per year. Hmmmm, \$50,000 per year as a resident slave or \$80,000 as a junior physicist. That's a toughy. Granted, not all junior physicist positions will get the same exposure to technology and procedure variety, but a fair amount will. Bottom line, when this rule goes into effect there WILL be a drop in medical physics matriculation."

20001309 "I would like to see the DMP program in effect. For those of us who are too late and will be only acquiring MS degrees, I think that the option should be there to 'transfer' this degree with its didactic and clinical training to perhaps even a 2 year 'credit' towards the DMP at institutions offering it. This might help students like myself pass smoothly over the cusp between MS and PhD degrees dominating the clinical field now and MS and DMP degrees dominating it in the future. "

20001337 "I think residencies should remain to be the path for training medical physicists who hold a degree in a field other than medical physics. Also, universities that offer a medical physics degree program should be responsible for providing hands-on clinical training."

20001359 As a current graduate student I can attest that the increased number of years of training required to achieve ABR certification makes medical physics a less appealing career path. If I knew I was going to have to go to four years of graduate school and complete a two year residency I would have gone to medical school and been a radiation oncologist.

20001360 "I would feel much better about DMP programs if they were split into separate didactic and residency phases and the student received support during the residency phase. I feel that 20-25k per year for 4 years is too much of a financial burden. If had faced those costs, I would have gone to medical school. In addition, I am worried that a DMP would reduce the value of MS medical physicists. I would like institutions to offer upgrade paths, especially to those who are already ABR certified."

20001382 "The DMP degree seems that it may devalue the Ph.D. and M.S. degrees in medical physics. As a Ph.D. student with the rest of my career ahead of me, this is troublesome. For M.S., a clinical doctorate would appear to hiring institutions as a better education -- thus making M.S. physicists less desirable. For Ph.D. physicists, institutions may feel that DMPs would better serve their clinical needs and would only hire Ph.D.s for purely academic positions, thus decreasing their salaries and

potentially their overall significance in the clinical scene. For me, the allure of the Ph.D. medical physics career is the ability to work in clinical and academic capacities simultaneously. A proliferation of DMP programs would hurt this ability."

20001444 "The DMP offers nothing to students, except a different title and significant debt. According to the then chair of the AAPM council, at the 2008 AAPM Meeting Student Forum, the main impetus for the 2014 rule was the fact that disparate backgrounds of ABR applicants are difficult for the board to process and the current Part 3 pass rate is low (~50% overall, ~95% for CAMPEP residents). What she was in effect telling us was that this new requirement was due to the under-staffing of the committee and the embarrassment of the AAPM at the pass rate. Those are not good reasons for the AAPM to recommend the mandate. Those are especially not good reasons when the new 2014 requirement causes a \*much\* larger problem for a much larger number of people, namely the lack of residency spots, and lack of funds to create new ones. The only people who seem to benefit are the ABR test committee (for the above mentioned reasons) and current employers, who can potentially convert their junior physicist positions to ""residency"" spots, more than halve the salary, and save significant amounts of money. The benefit of having all ABR certified physicists having completed a residency is rather nebulous, in and of itself. Eventually, some clever person saw the infeasibility of the residency situation, and decided who better to pay for the residency positions than the students themselves, distracting the students by giving them a different title, DMP. Additionally, physicists with identical training and credentials, but the ""lesser"" title of MS will suddenly be in a separate class. The DMP is essentially a scam to pay for a very poorly thought out residency requirement, fulfilled by almost none of those recommending it. It is often claimed that there is a dearth of ""qualified"" medical physicists. Unfortunately, the 2014 rule and especially a DMP will likely make the number of qualified physicists even lower over time, as fewer will be inclined to enter the field with the new requirements. Additionally, most program administrators I have spoken with have felt that a DMP will be untenable with their current class sizes. Since each student will also be a de facto resident, they will need to reduce admissions to have the required clinical faculty/student ratio. There is a good reason for me to support the DMP: decreased future competition for jobs. But, a bad idea is just a bad idea."

20001455 "There should be recognition given to the different professionals involved in radiation therapy, diagnostic imaging, and nuclear medicine. In short, there should be more involvement with other members of the staff that

medical physics will be interacting with to prevent the stratification mentioned in the survey. There needs to be a real close look at what professionals are required to make medical physics applicable to the broad needs of the public. The education of a person should be somewhat comparable to their employment expectations. Clinical medical physics in basic practice requires an advanced degree, but that does not mean they need an MD/PhD. So, please be careful that the requirements are in keeping with what the job entails so that qualified medical physicists are not the limiting factor in treatment. Research-oriented medical physicists should not be so dismissive of their clinical counterparts. It would appear, from the measures being enacted to prevent people from entering the medical physics community (i.e. by placing restrictions on who can take the ABR) that there is a serious education disparity. What is the purpose of an MS degree in this field if the community that represents the field is saying that an MS degree will not give the proper qualifications to even sit for the board exam? If an MS program exists only for the sake of weeding people out of the field or serving as an extra step in the PhD or "DMP" or whatever doctorate program, then it should not exist at all. This is frankly insulting and frustrating. I do agree that a residency program is important, but serving a residency as far-removed as possible, through a CAMPEP-accredited vacuum-tube school does not serve the needs of the basic community. What one could do is require a 3rd year in an MS program, since most schools offering the medical physics degree are at least trying to become CAMPEP-accredited, if they are not already. Otherwise, the current standing of the requirements appears to be sufficient. Maintaining continuing education courses, and references and recommendations from within the medical physics community appear to be exactly what the field needs to maintain integrity and competence."

20001457 Just do away with it for those who graduate from a CAMPEP approved program. This would greatly increase the motivation for the none CAMPEP approved programs to get with it.

20001494 The program as is with an addition of CAMPEP certification would probably attract more students.

20001513 I don't think many students out there will be willing to pay tuition in a DMP program when they can get full tuition waiver plus stipends in a PhD program or get paid for being a Medical Physics resident!

20001545 "A DMP degree would be a good idea. Also, residencies at my current institution are offered more often to those with degrees in related (but not medical physics) fields. More residency positions must be created for those with degrees in medical physics."

- 20001570 "Only 25 accredited residency programs so far, I doubt whether only 25 programs are able to train enough young medical physicists to serve the country. DMP for a short cut to ABR is not a good idea. More accredited residency programs is the only way. 5yr medical physics Ph.D. training+ 2yr residency are a reasonable education and learning time for ABR certified medical physicists. DMP? I don't think hospitals are willing to hire them compare to the 5yr PhD + residency. "
- 20011012 "The DMP degree simply seems like degree inflation. Though the 2014 policy puts the community in a funding bind, I'm not sure inflating an MS degree/residency combination to the title of ""doctor"" is the right way to go about it. Encourage self-funding of the residencies alone, instead of an entire DMP degree?"
- 20011017 "The DMP seems to be a great way of guaranteeing that experience sold on a resume is accurate and receives the credit that it should. However, it may also have the effect of making degrees earned before its advent appear less worth while. This an is especially frustrating possibility for a student looking at the employment horizon. Is there any way to back qualify individuals trained before the DMP with an equivalent degree? "
- 20011023 "A few rhetorical questions: what incentive will institutions have to offer paid residencies to recent graduates with PhD's, when they could have a DMP pay THEM to do the same work? Where specifically will the tuition money go? Will the potential salary bump due to the change in designation offset the huge amount of debt students will have to take on? Part of the appeal of getting a degree in MP is that it is relatively easy to get funding and you can finish with little debt, making it fiscally competitive with getting an MD for several years after graduation. The DMP will eliminate that incentive, and I doubt salaries will increase enough to offset it. Even if PhD students still get funding, if they choose to do clinical work after graduation they will be marginalized when it comes to finding a residency/job."
- 20011040 "By introducing DMP at this stage, we will completely undermine those individuals who have obtained an MS, while also doing much harm to the quality of research in med phys. I personally went into PhD because it seemed at the time to improve my options: It would allow me to do both research and clinical work in the future. However, by introducing DMP, people will have to choose to get a doctoral degree that allows them to go and work in clinics, or PhD that will only allow for research. I think there is a great danger in that. Many students who have the potential to become

great researchers will choose the path of DMP because it will certainly secure a higher pay compared to a PhD degree. Moreover, a DMP degree will simply segregate med phys researchers from med phys practitioners (I believe this will inevitably happen even though the policy makers seemed to have convinced themselves otherwise). I think what has marked the great success story of medical physics is that many of the researchers are actually involved in the clinics, they know of the need of the patients and the doctors. They have come to see the shortcomings in the field. By segregating the research from the practitioner, we will permanently damage the quality of research in med phys. Our field is not like theoretical physics. There, theorist can come up with fantastic new ideas while experimentalist attempt to observe those findings. For us, the need of the patient and what makes it easier for the doctors to diagnose the disease and for us to treat the patient better must come first. By introducing the DMP, I am afraid, we will have a group of med phys researchers who are not aware of the needs of the patients and doctors, and a much larger group of clinical medical physicists with DMPs that although aware of the shortcomings and potential ways to improve the practice of radiation therapy for example, are not in the position to do the necessary research. For the reasons described above, i think that DMP degree should not be implemented. I have no doubt that it will prove fruitful to the institutions offering the degree as they can collect much tuition from the individuals who would like to get a doctoral degree (and perhaps have not made it to medicine or dentistry) as opposed to having to pay PhD students to do research or MS students taking part in a well-structured residency program, but I am afraid that through this program we will permanently and strongly damage the quality of research in med phys. Currently, in addition to many successful med phys practitioners with MS that have gone through the residency programs, we are able to get many PhD medical physicists take part in the residency programs and become knowledgeable researchers and practitioners in the field. Why would we ruin this nice balance? "

20011068 "The DMP seems like a nice idea. However, the idea of a DMP/PhD program makes it seem like a medical physics PhD will have no value in a clinical setting, even after a residency and being board certified. Perhaps after board certification, a PhD medical physics student should also be recognized as a DMP/PhD if that is the designation hospitals will be looking for. I really hope the traditional residency is not lost when the DMP programs come out. I think that will be a dis-service to the profession."

20011081 "Honestly, I understand the premise, to a degree. There's an attractive quality to the idea that in 4 years, you are

done. I do think there may be more people interested in the field knowing that they don't have to pass a qualifying exam or suffer through potentially limitless years of research waiting for the approval of their mentor/committee. I feel like it will pigeon-hole the PhDs into only research/industry work, where they really should be seen as an asset to a clinical environment. This is more like going for the least common denominator, not striving for the best people. As for funding, my university threatens to cut our funding on a daily basis...something needs to be done about that. Particularly if the DMP students pay tuition, there can be no more hemming and hawing about where the support for the PhDs is coming from. It's absurd. I think this will effectively push the MS guys out of the market, and anyone who has an MS will be seen as an "old-timer" that is out of date and out of touch. Which is sad."

20011090 "It might be beneficial, if there will be a DMP path, to have individual hospitals fund students for a 3 or 4 year degree, and then have a 3-4 year commitment from the students. This would lower the higher cost of graduates once they receive their DMP."

20011112 "It seems to me that addressing the 2014 mandate by inventing a degree is not the practical way to go. The problem is not that there are a lack of residency positions, but that the policy makers did not have sufficient due diligence to account for the feasibility of changing Board requirements. If the 2014 mandate was set in place to ensure adequate training then the solution is to change the Board exam. All that matters is that a candidate has sufficient training and knowledge to pass the exam. It does not matter how the candidate received that training, through an accredited residency or not. If it was found that non-qualified personnel were passing the exam, then the exam should be changed, not the method of knowledge accrual. If the 2014 mandate was set in place to make it more difficult to become Board certified, then they will have achieved their goal and there is still no need for a DMP."

20011123 I'm concerned that the DMP degree would degrade the status and income of MS medical physicists without offering many benefits to the medical physics community.

20011139 "Here is a hypothetical situation that some of the students are considering: if someone without residency passed Part I of ABR test before 2014, and is not able to pass Part II at some time after 2014, and he/she is required to retake Part I. Would this residency requirement still apply to him/her? Thanks."

20011147 I feel the DMP degree will steer many students away from

doing a PhD and that this will degrade the quality of research. On the other hand it will improve clinical training.

- 20011152 "If you allow the DMP degree I feel that the large majority of students in the field will choose DMP over PhD. Also those that do get a Ph.D. will be limited to only academic positions in which they will have to compete with computer science majors, etc for academic positions."
- 20011154 "I think some people don't liking the idea of calling DMP a ""doctorate"" degree. PhD training is not the same as DMP training. If it is clear that it is equivalent to a Masters degree plus residency training, people will not reject this idea as much."
- 20011174 "-The 2014 ABR policy is a good idea, but care must be taken not to decrease the heterogeneity of the field, which has been an immense factor in the success of medical physics. Perhaps some residency slots and/or scholarships could be given to non-medical"
- 20011179 "In my opinion the DMP is not going to offer anything new, other than more disparity among colleges. "
- 20011180 "the DMP makes sense and it is time. I agree that it will entail paying tuition and put some financial strain, but no different from other clinical health fields such as dentistry, etc. I also believe that in the long run this will better establish the profession in the eyes of the public and bring with it more recognition and more applicants. The current system may be a waste of time for the students in doctoral research programs that are not really interested in the research, and dilute the research funds for those that have true academic inclinations. "
- 20011205 "I can currently a PhD student working on research and gaining no clinical experience. When I am finished I would like to work in a clinical environment. The problem is that I would be unlikely to be hired due to lack of experience. More residency programs must be created to allow the proper training for PhD students wanting clinical experience. Although I would like to work in a clinical environment, I still enjoy research and could turn back to it someday. I think the creation of DMP programs will slow advancements in the field and hurt the stature of medical physicists with future generations of students choosing the easier DMP degree."
- 20011215 "The success of Medical Physics professional degree programs will be closely tied with how lucrative the profession is. Significant changes in the health care industry could probably collapse these programs pretty quickly, especially

with how small the field is. DMP programs will also have a detrimental effect on residency programs- if training exists via DMP programs, then hospitals will be less inclined to start a residency program. This will lead to graduates leaving school with larger debts to pay and fewer research skills. If there are less physicists with good research skills, it will lead to less funding opportunities for medical physics graduate programs, etc. "

20011231 "Personally, as a Ph.D. student, I find a DMP degree unattractive simply because it is not as likely to be a funded program as is the Ph.D. I also believe that MS students aspiring to work clinically will have a much more difficult time obtaining positions when a 'doctor' in medical physics could be had. Already, residency positions are preferentially given to those with more clinical and academic experience leaving MS students with few to no options aside from summer internships to gain true clinical experience. With the institution of a DMP degree, what purpose does the MS then serve? Will a MS in medical physics be sufficient to (practically) find work in the field? As I see it, the DMP degree is quite simply a MS program with a guaranteed 'residency.' What is the difference between a DMP degree and a MS student whose pays for a 2-year residency after obtaining their degree? Why not use the MS degree as a proving ground for MS-specific residency positions so that only the most qualified MS students obtain residencies as opposed to the riskier move of guaranteeing 4-years to a new DMP student who has no qualifications to indicate their proficiency in the field? In this light, it seems that 'DMP' is just another name for 'MS + residency' without the a check step in between."

20011248 "People do not learn as well when they are paying for education/training as when they are being paid to work. The sense of obligation to function at a high level is missing. Trainers do not train as well or expect as much from trainees if the trainee's are purchasing education vs. if the trainer actually needs to depend on the trainee to be able to function at a certain level. I think that real ""on the job"" training is better (residency or junior physicist)."

20011256 I think creating a new degree to address a challenge/requirement that the profession was slow to address is passing the buck to new entrants in the field (and partially abdicating the field's response to this challenge to the least experienced).

20011263 "DMP degree will make the profession more attractive. On the other hand, there should be a clear defined path for MS medical physicists to be able to get DMP degrees."

20011266 "I have heard different explanations of the DMP but no

matter which explanation I have heard I oppose the idea of the DMP degree. Master degrees should become self funded followed by a traditional residency or some sort of campep monitored mentored Jr. position, which they are already trending towards. While PhDs should remain intact with the added clinical training portion built in. It would be a shame to reduce the amount of research that students contribute to the field by creating the DMP which, from some people I have heard, would just be curriculum and training that is self funded. I feel the masters path in effect already covers this. And to those who say it will have research involved, you are just putting a different name on a PhD and saying it needs to be paid for and take 7 years. Also the whole idea of the title DMP seems ridiculous, if patients or the average person asks what type of doctor you are, I would not want to respond with DMP. Unlike PhD and MD which are well known titles, the average person will not know what DMP is and may think it is some fake type doctor, I feel it will degrade the credibility of the profession. Some say it will be like pharmacy degrees, but pharmacy is a much more well known field to patients and everyday people, we have enough trouble explaining our role and dont need the additional task of explaining the credibility of our degree."

20011269 "DMP degree is just to make more money for universities, it will make MS program obsolete and diminish the role of research in medical physics' clinical practice. Nevertheless clinical experience should be crucial requirement for any medical physicist."

20011270 "I am of the belief that the use of the 'doctor' title for any new degree will add more confusion than already present in the clinical setting between MDs and PhDs. The title should not be used as an incentive to have students pay their way through the program. In my mind, this level of qualification already to already exists (Master's degree in Medical Physics + Medical Physics residency), only that these students often do not have to fund their training. The effort should therefore be directed toward developing the infrastructure for new residency program, including both the financial and mentorship aspects, rather than establishing a new degree program."

20011273 "I am curious as to how this will affect those who graduate with MS degrees. If/when the DMP starts, an MS in medical physics will have seemingly much less value, while someone who pays their way through a 4 year program can have the distinction of being called a doctor. "

20011287 "I feel that state schools are going to have an influx of students applying. Although out of state tuition would be paid for 1 year, once a student is considered a state

resident, cost will dramatically decrease. This could cause a lot of problems for private schools."

20011307 "I support the DMP program to an extent, but am turned off by the tuition. If we could somehow lower this, I would fully support it. Otherwise, I would have just entered medical school."

20011316 "I am currently in a PhD program, but I would stay an extra year if I gained a dual DMP/PhD degree. There's absolutely no chance that I would pay for a professional degree like the DMP. It would have to be supported for me to attend. I think that the option of a clinical supplement to a CAMPEP accredited PhD program in order to gain certification is a great idea."

20011323 "In my very limited experience, those medical physicists whose only degrees are outside medical physics (say, a physics PhD), and their only medical physics training was through a residency - these people don't know NEARLY enough to function effectively as a medical physicist, let alone teach a medical physics class. I am VERY grateful that residency programs turned me down, with my PhD in physics, forcing me to get a master's in medical physics. The four-year residency MUST include coursework similar at LEAST to a master's, or else you will do a grave disservice to the field."

20011331 "be able to carry over credits from previous program (MS) to the next advanced degree (i.e. DMP, PhD)"

20011338 "In theory, I think the DMP is a great idea, but practically, the crushing debt of four years of tuition & rent with little or no income is frightening, and a prospect that Ph.D.s don't have to face. I am in favor of the DMP degree, and might even consider it myself, if there is a way to provide the final two years at a reduced cost, or if some sort of stipend could be provided to students by the program. Currently, I am considering applying to a Ph.D. program on completing my M.S., and I think that would still be the best option if a DMP were also made available."

20011342 "No real suggestions I think the deadline is too soon for the infrastructure that is in place and the current economic climate. More centers need money to start residency programs. Also perhaps the encouragement of CAMPEP approved PhD programs to include a credit based clinical component. Finally, as a Ph.D. student I have serious issues with a clinical doctorate degree - I feel it degrades the Ph.D. degree. The ""doctor"" title for a scientist should be reserved for those who go through Ph.D. programs, perform scientific research, and write a thesis. I feel there should still be a distinction and an emphasis for

preference for those who go through the rigors of a Ph.D. program with full scientific training. "

20011345 I think implementing the DMP is an awesome idea. I only wish that it would have been implemented earlier.

20011368 Nobody is going to hire a junior clinical physicist when they can wait a few years and have someone pay big money to train on the job in a residency.

20011380 "Seeing as how there are a lot of students who know they want to work in the clinic and hate doing research, it's probably better for the field to split into DMP and PhD degrees. Getting the clinical students out of the PhD programs will open up funding for other students who want to focus on research. The only downside is that it would probably create some confusion for employers. With two very similar degrees, it's important that they understand the differences so that they understand the qualifications of the person they're hiring."

20011384 I think DMP will degrade the profession.

20011411 "I feel that establishing a DMP degree is a terrible idea. The four-year DMP degree is nothing more than a masters degree (MS) with a residency. Why call it something else? MDs do not get an additional degree at the end of their residency. They are just training toward eventually becoming board certified. Which is exactly how it should be for physicists. Recall after certification (ABR, at least), an individual gets the title of DABR (if you really want an extra title). Perhaps calling the DMP a doctor is a strategy to try to sell the degree to incoming/ prospective students. This is how education programs would justify making the students pay for the degree. Which in my opinion is a bit of a dirty trick. If money is really that large of an issue, perhaps requiring all masters student to pay their own way unless there is a professor willing to fund a student whose intended end-degree is a MS (which is not common, but I know the lab I am in regularly does). Then awarding RA (i.e. funding) for students who commit and are qualified to obtain a PhD. That all being said (the idea of making MS student pay i.e. no research assistantships, i.e. no research), I think research is an invaluable part of the education of all physicists both academic and clinical. Having to conduct research provides a student with great problem solving skills that will serve them well in the clinic (i.e. it keeps them from becoming techs à or people who follow a cookbook method for all tasks without questioning their validity). It also teaches a person how to stay in touch with research trends and knowledgeable of the new technologies that are becoming available. I think the DMP would also tarnish what the PhD degree means. It would

lend itself to establishing an ambiguity as to what it means to be a doctor of medical physics."

20011415 "There is no need in creating a professional degree such as the DMP, specially because the DMP is completely equivalent to a Master Degree plus a residency. I don't think that creating a DMP should be the reason for an increase in residency positions. If the ABR will require residency experience, this should be reason enough. Also there are many students that after finishing their PhD would like to gain more clinical experience and the Medical Physics programs should be aware of this need and create residency programs to fulfill it for the student's benefit. The ABR requirement for residencies should not lead to the creation of a DMP and if created it should be called a professional degree and not a doctorate! This DMP seems more like an economical issue than an educational one. "

20011420 "I think that the creation of the DMP will have a negative effect in the perception of a MS or PhD graduate. The PhD graduates will be perceived as not clinically trained, which is not always the case. The difference in the name of the degree on their resume may close doors to clinically well trained PhD graduates. I think that one of the things that make the medical physicist profession unique when compared to other medical professions is the mindset of a physicist/engineer behind it. This mindset is built and cultivated through research and keeping that component on the education is important. In my opinion, it provides the difference between someone who knows procedures and how to do their job, and someone who is capable of picking up the subtle things that may be signs of a serious problem. "

20011425 "The 2014 policy, while a good idea, as it has been implemented amounts to an unfunded mandate that is a tremendous source of stress for current graduate students. There is a near consensus that current medical physicists, the AAPM, and CAMPEP are not doing enough, quickly enough, to help current students find residencies. The DMP is preposterous. I have no idea why the higher-ups in this field think that a student is willing to saddle themselves with physician level debt for lower than physician level pay. In no other field is a student expected to pay for their own post-doc. The option that was not listed above was: 15."

20011439 "Apart from not having enough residency positions right now, and exacerbating this need by requiring a residency in the future, there is no need to create another degree. Outlets exist to get to the desired career goals whether it be clinical or academic. A person who has a DMP degree may not be looked upon as equivalent by MD's for a long time. Personally I know several physical therapists who do not

notice a difference in their interactions with MD's or with patients, it basically didn't change what they do or how they do it, it simply changes a name, so why create an entirely new program that won't accomplish anything different than what is already achievable?"

20011440 "Hospitals and existing programs, especially in this time of economic downturn, will have to be economically enticed to start programs where they do not have to pay a 1/3 or 1/2 salary to a resident, while losing some of their own workforce to training of the resident(s). There is not really a monetary or clinical efficiency incentive to create more residencies. The only option, would be to eliminate payment to residents across the board to give an incentive to these facilities to start programs, as it would cost substantially less. This in turn will reduce the number of students entering the field because the residencies will be too costly, without a perceived benefit (i.e. a higher degree, paid residency, or "on-the-job" training). Without eliminating the economic downsides to residency programs, it will be hard to convince institutions to begin residencies. The DMP programs may offer a solution by creating a "residency-like" program that generates revenue (and thus incentive for institutions), while offsetting this by giving the student a higher degree and valuable, well-overseen experience."

20011443 "Expecting students to pay to go to work 8 hours a day isn't an attractive selling point of the DMP. MS student already come out with ~\$50,000-80,000 debt and doubling this is not acceptable."

20011458 "1. How to distinguish between MS & Residency vs DMP? They do the same didactic and residency training. One is a Doctor and other is not. Thus, you will be called Doctor just because you paid for those two residency years? 2. With DMP, all the MS and residency programs are going to die. DMP will be money-minting machine for universities and hospitals to provide unpaid residents. 3. DMP will be a viable option to few students fresh after their undergraduate degree. It will not be an attractive option for students with MS/PhD in other fields. This will stifle the cross-field entry to medical physics and thus will limit the field and its development."

20011466 "If a DMP becomes absolutely necessary, I would design a program such that it can accomplish its goals in three years. There is plenty of time during breaks and the summer semester to accomplish any clinical training needed to fulfill these obligations. This would limit the total cost to the student while providing efficient use of each student's time here at Duke. Instead of two days of class per week, we can use the other three days in the clinic. It

seems as though it is a lot of work and so it should be to justify the quality of a DMP vs. a MS in Physics. If this was an option I would be extremely interested."

20011476 "The DMP degree is not the logical answer, in my opinion.

In 2014, granted there were enough residencies, why would a clinical physicist student pay to go to school for 4 years (DMP) when they could get a 2-year masters degree, then get paid for two years as a resident. If I wanted to pay for 4 years of school I would go to medical school. If I wanted the prestige of a doctorate degree then I would get a PhD, be in school for only a year longer than the DMP (on avg), and get paid for it!"

20011483 ABR certification will be great and improve the overall quality of medical physics as a profession. DMP degrees will degrade the role of the current MS and PhD trained physicists. The DMP will not be any more qualified than an MS trained physicist and will delude the distinction that comes with a PhD trained physicists. The system we have now works. We only need to expand the system to include more clinical training opportunities.

20011485 "I believe that the DMP is a very bad idea for the future of the field. I doubt that I am even allowed enough characters to describe how much I am against it. So what we have now are MS and PhD physicists. You want to make these graduates undergo an additional 2 years of residency. This makes the two options 4 years and 8 years respectively (including residencies). From what I understand, the DMP program is being proposed to be a 6 year program. How neat -- it conveniently averages the lengths of the other two programs. Other than the fact that the DMP students will pay their own way, what on EARTH are they accomplishing that a MS student with a residency doesn't? There is the research component that has been suggested, I suppose. But whenever you put a time limit on research, you are removing its validity. Maybe the DMP student will do some research, but they have to be out in a set amount of time, so when they are done, the research is over. And who is going to stick around getting paid like crap for 8 years to get the PhD? Not as many people, and then who do you have that will TEACH medical physics to the next generation? Not MS people. Not these DMP people. It's, quite frankly, annoying enough that PhD students now have to do a junior physicist-type position for two years but get paid 1/3 as much. Now you want people to still go for the PhD when you've invented something that completely demeans it? The limiting factor is mentors, not money. Until you have enough people willing to mentor in these residency programs, it doesn't matter WHO is paying for the education. Quite frankly, the DMP program just looks like a cheap way to get people to pay for their own training. Which is fine, but lets call a spade a spade and

not pretend that the program is anything other than a ploy to get students to pay their own way. Just like med school, which is a fine way to do it. But then don't expect people to go into PhD programs and get used to the fact that pretty soon you won't have any PhD physicists to teach any classes. I think that it is a horrible, horrible idea that will severely degrade the value of a PhD in medical physics. There was an additional reason that I hated the DMP concept but I can't remember what that was, so I suppose that I'll have to stop now."

20011500 "I think there should be a poll of the CAMPEP-accredited residency programs to see: 1) How many applicants they have had over the last three years from graduates of medical physics programs (CAMPEP and non-CAMPEP), and how many applicants were from other disciplines. 2) How many of those programs ultimately offered the residency position to a medical physics graduate. My impression is that some centers prefer to accept graduates from other physics disciplines to give bright candidates an opportunity to enter the field, because historically this has been the function of the residency programs. That era should be over now that medical physics students will be required to complete a residency for ABR certification. Another option would be to lobby Congress for a medical physics stimulus package! (only partially kidding)"

20011511 "This will lower the research and innovation components of medical physics, which is not good since there are so much unknown but critically important in this field."

20011548 "I agree wholeheartedly with Dr. Tim Johnson's arguments in the point/counterpoint article: Candidacy for Board certification in Radiological/Medical Physics should be restricted to graduates of accredited training programs  
Timothy K. Johnson and Bhudatt R. Paliwal Reproduced from Medical Physics, Vol. 27, Issue 5, pp. 825-827, May, 2000"

20011558 "One possible solution would be to get rid of the MS degree, enact the DMP, and then have DMP/Ph.D. programs similar to the MD/Ph.D. degree offered at some institutions. This would then elevate the field of medical physics as a whole since now all medical physicists would have at minimum a professional doctorate degree, while at the same time it provides an option for those interested in research and a career in academic/clinical medical physics. This solution could be combined with board certification and licensure so that starting in 2014: 1) Licensure is required to work as a clinical medical physicist 2) Board certification is required for licensure 3) A DMP (or DMP/Ph.D.) is required for Board Certification All physicists who are board certified (MS or Ph.D.) in 2014 would be grandfathered in so that they could be licensed and could still practice. Then

current graduate programs would need to transition to DMP (instead of MS) or DMP/Ph.D. programs (instead of just Ph.D.) in order to meet future training requirements. Probably still some things that need to be figured out with this idea, but its what I can think of right now. "

20011577 "I think the DMP degree is not a bad idea for medical physics. Up to the career interest you can choose DMP or PhD. DMP can be a good choice to who is interested in clinical profession. However the PHD research experience should also be valued at the same time. For some position like clinical professor in medical physics, only DMP is not enough. "

20011580 "I believe that the DMP will likely be an unattractive option for students. Because there is no undergraduate medical physics curriculum the medical physics field is not commonly known to undergraduates and given the option to go to graduate school that funds you or going to a program that you'll have to pay for which you don't know much about, I think the students will choose graduate school (assuming you could get into a DMP program out of undergraduate). Otherwise if the DMP is a program that you enter after you have received your masters, why not just apply for a residency program where you actually get paid? Also if I am going to pay to be in school for another 4 years after my masters then I would expect to be paid more than what current medical physicist get paid, which is not something that I think hospitals will agree with. "

20011592 "As I understand it, the 2012/2014 initiatives are ""artificial"" in some sense, since there is not a significantly larger demand for clinical medical physicists in general, but there is some idea that the training and certification of medical physicists needs to be improved. I believe that there should be no change to the availability of CAMPEP residencies. If the initiatives are necessary, then the system will work itself out ABR physicists will become more rare, and they will become a more valuable commodity accordingly. Perhaps not everyone is qualified to become ABR certified after all. I guess my point is that this notion that everyone should have the chance to go through a CAMPEP residency and be ABR certified is bogus, and the addition of the DMP degree to this end will only cheapen PhD degrees (and will make MS physicists look less competent)."

20011704 "My concern about having to pay upwards of \$80-100k a year for a DMP degree would be, why don't I just go to medical school? It's the same amount of time and a radiation oncologist has a very similar job with a higher pay scale. Especially if you're coming in with undergraduate loans, or masters degree loans, that's a lot of debt to take on.

Alternately, I don't know how you would get it paid for. If the DMP degree programs were at hospitals perhaps DMP students could be considered some type of employee for the 3rd or 4th year. If I were an undergrad applying to grad programs, the idea of getting education and training all in one go would be very appealing, but not the price tag. Right now you can get a Ph.D. and a residency without paying for either. I probably wouldn't have applied if you had to pay for it. I don't know if I would have gone to another profession had that been the only option, but I would not have considered it as strongly. "

- 20011709 "The medical physics profession is eating itself. If you want to train technicians then do so. Do not require something that is nearly impossible to obtain. There are precious few CAMPEP accredited programs and fewer residencies as far as I am aware though residencies are not collated anywhere to my knowledge such as is on the CAMPEP website. By only requiring residencies, you are still de facto requiring a PHD because of the scarcity of such programs."
- 20011713 DMP sounds inferior to both MD and PhD. Like a glorified technologist.
- 20011722 "It seems like the only difference between a (MS+residency) and a DMP, is the DMP has to pay a lot more fees for the title of doctor. Why should a DMP have to pay for their 2 yr residency while the MS gets paid during residency? I strongly agree with the need for CAMPED MS/PhD and a 2 yr residency, but DMP issues seems to distract from what the real focus should be, which is improving patient care through numerous high quality training programs. The DMP is just a paid-for title, which may perhaps create sense of false elitism among the recipients and degree conferring institution. Honestly, I really don't care, I would pay a DMP the same as a MS + residency."
- 20011724 "Personally, I think the policy should be students entering a Medical Physics program after a certain date should have to complete a residency to obtain their certification. It would make things a little clearer and easier for students to make an informed decision about whether or not to apply to the field. "
- 20011724 "Personally, I think the policy should be students entering a Medical Physics program after a certain date should have to complete a residency to obtain their certification. It would make things a little clearer and easier for students to make an informed decision about whether or not to apply to the field. "
- 20011726 "I worry that they typical undergraduate student does not

know enough about the field of medical physics to make the decision of whether they will go clinical or into research. As a student representative for our doctoral program I am heavily involved with working with possible candidates for our program. It is rare for a student coming out of college to know, without a doubt, if they want to be a clinician. This raises the question of how are they supposed to know if they should pursue a Ph.D. or DMP? I believe the appeal of the field will drastically reduce when undergraduate students learn that they will not only have to complete some level of graduate school, but also put themselves through a residency program. Generally, physics, chemistry, or biology undergraduates who are interested in the field also consider alternative post-bachelor paths. I think that they will begin to choose these other paths more often. If it becomes necessary for students to pay a form of tuition to participate in a residency (i.e. lack of funding makes it impossible for institutions to offer enough residency spots without being compensated by the student) there will be a sharp drop off in interest in becoming a clinical medical physicist. MD's pay to go to school and get paid in their residencies, the opposite would be too much of a step down for a student in their mid to late 20's or early 30's. Furthermore, I know of some excellent research that was conducted by students that knew they wanted to go into the clinic and I wonder if that same quality of research would come out if these students entered a DMP program. As far as recommendations go, I think it's going to be very important to educate younger students about not only the stipulations but also the rationale behind this 2014 ABR policy. Frankly, the thought of joining a field that decides to put their own new members through additional hardship is tough, especially when it's not quite clear to me why it's necessary to change the current practice."

20011728 "I think implementing a DMP program or an advanced combined Ph.D. with clinical residency will definitely improve the stature and visibility of the field. Also, I really like the idea of a combined DMP/Ph.D. program (like an MD/Ph.D.)."

## Verbatim Comments by Postdocs to Question 22

*“Apart from DMP programs, what alternative solutions would you propose to address the number of residencies required to meet the 2014 mandate? What additional steps should be taken to assure adequate residency positions by 2014 such that all qualified students may enter residencies?”*

20003627 "Construct a special committee to decide ""who"" is going to qualified for the exam."

20003630 "I think the best solution is to establish more clinical residencies that would require a PhD in physics or medical physics, or allow campep approved mentorships in hospitals, also requiring a PhD."

20013619 "A structured mentorship, whereby a training center (possibly a community hospital) could affiliate themselves with a CAMPEP accredited residency program in order to provide additional training and faculty resources that may be absent from their center That sounds good to me. DABR's should be allowed to hire 'residents' at a reduced salary until they're able to sit for their boards."

### Verbatim Comments by Postdocs to Question 23

*“We welcome your comments, ideas and suggestion, regarding the 2014 ABR policy, residency training, DMP degree, funding solutions, and the anticipated effects of such policy decisions for individuals as well as for the profession.”*

20003628 "The DMP seems to be the same as a master's + residency. It would decrease interest in masters programs, forcing all master's programs to restructure as DMP's, or become obsolete. Unless DMP programs were created at institutions that previously had no program I don't see how this could help the residency situation with regard to the 2014 requirements."

20003630 "It is extremely important to ensure quality of patient care that clinical physicists have a PhD degree in physics or medical physics before being accepted into a clinical program. It is the depth and rigor of a traditional PhD physics program that produces the most skilled and qualified people especially with regard to the handling and workings of complex instrumentation), who can then be considered for clinical training. Trying to take a shortcut will only degrade the quality of medical physicist."

20013619 "Good luck finding the \$\$\$\$. 2014 is a lofty goal, time will tell."

## Verbatim Comments by Residents to Question 22

***“Apart from DMP programs, what alternative solutions would you propose to address the number of residencies required to meet the 2014 mandate? What additional steps should be taken to assure adequate residency positions by 2014 such that all qualified students may enter residencies?”***

20002637 "Appropriate advertising, and acceptance of qualified foreign doctoral students will help to alleviate the burden. A rigorous interview process should be held which can test the quality of each applicant."

20002638 "I am currently a resident in Ontario, where residency has been established and quite common for many years. My initial feeling is that the worry about not enough residency spaces is not going to be as big of a problem as potentially anticipated. A lot more residency programs have been started, and I would worry more about over-compensating and then having too many residents, who are then unable to get jobs. For smaller centers that require more resources for course components, I believe that associating those centers with approved programs will ease the burden."

20002639 How about keeping the ABR from passing stupid rules that completely destroy Graduate programs as we know it?

20002650 The DMP program is more similar to (and could replace) an MS + a 2 year residency and should be viewed as a similar credential.

20002651 Encourage more centers to become CAMPEP accredited – but this shouldn't be done at the expense of the student's pockets.

20002653 Increase the number of Accredited residency programs

20002673 "To encourage institutions to apply for CAMPEP accredited graduate/residency program. For small clinic/university, to create partnership between non-accredited graduate/residency program and accredited graduate/residency program, so students/residents from smaller clinic or university will have access and will obtain a degree/residency from a CAMPEP accredited institution or affiliated with a CAMPEP institution."

20002677 More advertising aimed at junior and senior undergraduate science students is certainly justified.

20002680 "Increased funding / assistance in establishing residency programs besides the TG reports on this, a framework should be established for developing these programs as well as some financial assistance in the development of these programs. There is a high barrier of entry to establish a residency program, which prevents institutions from establishing programs."

20002686 "There needs to be a match system just like there is with physicians. But there will never be enough residencies to offer the required training to the annual class of new graduates, which means about 50% of those students are going to be completely fucked. "

20012631 "The majority of training is currently attained ""on the job"". Most physicists currently in the field were trained ""on the job"". As such, it seems that there should be a large number of institutions that already have the available resources to provide adequate clinical training. Perhaps

with some incentives and resources to ease the burden of accreditation, these facilities could be persuaded to initiate an official residency program."

20012648 "If you need more Drs, open more DMP Programs. This is not the problem right now. If you need more residents, open more residency programs. Is this too simple of an answer? Let's not let financial greed govern this simple problem."

20012659 "inc. residency programs, inc. funding for residents, inc. # of mentors and allocate resources/funding/salaries..."

20012675 "Provide additional resources, guidelines, and/or incentives to help universities and hospitals set up programs to provide appropriate training, be it through residencies, DMPs, or otherwise."

20012679 "In my opinion, the only way to produce enough residency positions is to encourage more affiliate residencies through funding and other incentives. From my experience, MS students seem to have a huge disadvantage when applying to current residency programs. Since most of our graduates are MS students, this will have to be addressed."

### Verbatim Comments by Residents to Question 23

*“We welcome your comments, ideas and suggestion, regarding the 2014 ABR policy, residency training, DMP degree, funding solutions, and the anticipated effects of such policy decisions for individuals as well as for the profession.”*

20002637 "I strongly feel that a DMP will only serve to decrease the quality of medical physics expertise in the field. It has always been my understanding that a medical physicist should be a competent researcher as well as a clinician, with a clinical DMP, one is in effect decreasing the importance of this role. In this situation, medical physicists will have very little to add to the radiation therapy department, given the expertise that radiation therapists, and radiation oncologists already have."

20002638 "In my opinion, the 2014 policy is formalizing/enforcing what has happened in Ontario. Starting grad school, I essentially knew that to stay in Ontario after graduate school a residency was required, and for many centres, residency is competitive enough that a PhD is essentially required in order to get a residency spot. In addition, a PhD is required down the road if you are interested in a combination of clinical and research. In my view, the DMP program would potentially replace the Master's Physicists - in that instead of doing MSc then a job, you would do a DMP - some research, and organized clinical training, which would improve the "professionalism"/stature of our profession with respect to current informal on the job training as a junior physicist. Alternatively, those with a greater interest in research would choose the PhD/residency pathway. As a "professional" program - the DMP should not have a low tuition - it should be on par with medicine, law, etc. as the aim in general with the 2014 policy is partially to formalize the profession in terms with more standardized training, education and qualifications."

20002639 "I have a M.S. from an accredited graduate school and residency. I think it is important to keep our grounding in the scientific realm. If/when DMP's start up, do I get one because I got a M.S. and completed a residency. I don't think so. I wouldn't want one either. Getting a Ph.D. is a process that is unique to the scientific field and should be preserved. DMP's will be viewed simply as a Master's level Physicists that will inevitably have the argument on the MEDPHYS list-serv that they deserve equal pay to Ph.D.'s because they are called Doctor over the phone by sales reps."

20002673 "I think that with a DMP, the research component of the job of the medical physicist will greatly suffer. I don't think a "Doctor in Medical Physics" from a DMP will be able to conduct research the same way a "Doctor in Medical Physics" would, after 2years of MSc and 4 years of PhD mixing research and clinical work in a DMP, I predict that the research will be of poor quality and will take last priority after clinical work. "

20002686 "When physicians graduate from their residency program, they are eligible to take their final board certification exam, and no ever questions that they are qualified to practice their specialty. They can leave residency, and immediately find a job practicing medicine as an attending physician. However when medical physicists 'graduate' from their residency, they still are not able to practice medical physics since they need one more year of clinical experience to take Part II exam, and then another 6 months after they are allowed to take Part III. If the ABR wants to argue that CAMPEP residencies are required to become a competent medical physicist (funny how that standard conveniently doesn't apply to those comfortably wrapped in the 'grandfather clause'), then they must also concede that when a physicist jumps through all their hoops they are qualified to practice medical physics and sit for the Part III exam. Instead, physicists currently 'graduate' from a residency, and then must spend ANOTHER 2 years trying to prove their good enough to be let into the Good 'ol Boys Country Club, scrounging for any "junior medical physicist" trainee job they can find. The fact of the matter is this

whole residency game has NOTHING to do with ""quality patient care"", and EVERYTHING to do about money. By adding another layer of requirements to an already egregious process, those already possessing ABR board certification and who make the rules that apply only to others ensure every more lucrative salaries for themselves."

20012631 "While I do not know the final details of the DMP degree, it is my understanding that the 4 year curriculum would contain 2 years of Master's level coursework followed by 2 years of clinical training similar to residency training. I do not see how this educational pathway warrants a doctoral degree. The comparison has been made to degrees such as the PharmD. As far as I know the PharmD requires 4 years of academic instruction with clinical rotations mixed in. AND upon finishing their PharmD, students are still encouraged to enroll in RESIDENCY TRAINING programs. I agree with the suggestion that a DMP-similar program would help to provide the needed number of Masters level medical physicists, and that it would ensure their adequate training. I simply disagree that it should be considered a doctoral degree. I believe this would degrade the status of people who have spent many more years in graduate school earning a doctorate and then an additional 2 years completing their clinical training. With such a shortened curriculum, I fear that the medical physicist market could become quickly saturated. The financial repercussions of this degree must also be explored to be certain that no person with an interest in the field would be unable to attain training due to the substantial cost of education. My overall feeling is that having a training program of this nature is a good thing for our field, but that it does not warrant a doctoral degree."

20012679 "I am of the opinion that the 2014 initiative will undoubtedly improve the clinical practice of medical physics. However, in doing so, it will fundamentally change the nature of the field and those who aspire to pursue it as a career. It may be that most of the students who enter this field are doing so not because of an inherent interest in medicine, but because it is a way for them to have a viable career without giving up on their interest in physics. The 2014 initiative will turn us into a medical profession instead of a physics profession. This will be better for patient care, but may have unintended consequences on research and academics."

20012687 What is going to happen to someone who has completed a CAMPEP MS and a CAMPEP residency? Will they get the title doctor as well? Does that make me less competitive because I don't have that title?