Medical Physics During the COVID-19 Pandemic: North American Perspective

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Disclosures and Conflicts

- I have nothing to disclose and no conflicts of interest
Introduction

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Introduction

• January 2020
• Appeared in North America
• October 2, 2020
  • ~9,000,000 total cases
  • ~313,000 deaths
• May 18, 2021
  • ~39,300,000 total cases
  • ~880,000 deaths

Clinical

- Minimize risk
  - Patients
  - Employees

- Maintain quality care
  - Prioritize and maintain clinical services
  - Identify clinical alternatives that minimize the use of resources
  - Modified clinical schedule
  - Options for physics coverage
Clinical

- AAPM Professional Council recommendations
- Identifying minimum staffing models
- Identifying work schedules considering staff needs
- Awareness of regulatory or accreditation requirements
- Ensuring resources for off-site work
- Timing of tasks
Clinical

- COMP recommendations
- Prioritizing
- Collaborating
- Protecting
- Innovating
- Sharing
Clinical

- Facility access
  - “Essential employees”
  - Contract medical physicists, service engineers, applications trainers
- CISA guidance
- AAPM essential workers letter
Regulatory and Accreditation

- Limited staffing and site access required enforcement modifications
  - ACR
  - TJC
  - NRC
  - ADCL
  - USDA
- CRCPD
- Guidance to U.S. state regulatory bodies
Education

- Training programs (graduate, residency, post-doctoral)
- Didactics
- Research
- Defenses

- SDAMPP, CAMPEP, AAPM Education Council guidance letters
- Residency Program Directors
- Graduate Program Directors
Education

• CAMPEP certification activities
  • No on-site reviews
  • Program Director discretion
• ABR certification
  • Exam schedules altered
• CCPM membership examination
  • Membership oral exam delayed and moved online
• Fellowship candidate exams moved online
Research

• AAPM Science Council guidance letter
• Clinical trials and clinical research
• Planning to maintain research capacity while transitioning as much research effort as possible to remote work
• Operational access to appropriate equipment and data during the pandemic
• Coordination with research sponsors
• New opportunities for medical physics research created by the pandemic
Research

- Research entity accommodations
- Allowances and extensions
- Unbudgeted research expenses
- Rapidly changing

- New research opportunities
  - Imaging
  - Therapy
Research

• Early lack of laboratory tests
• Imaging diagnostic trials

• MIDRC initiative (NIBIB)
  • Lead by Maryellen Giger, PhD
  • Open-source image database for COVID-19 research
  • Joint effort of AAPM, ACR, RSNA
  • Development and validation of AI to enable early detection based on COVID-19 imaging biomarkers
  • Potential future applications for other conditions
Research

• Therapy
  • Low-dose treatment for inflammatory conditions
  • Potential reduction of acute respiratory distress
Conclusions

• COVID-19 had an unprecedented impact
  • Positive
  • Negative

• Improved efficiency
  • Clinical operations
  • Education, training, certification

• New directions for medical physics research
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