Key Strategies to Enhance Infection Prevention and Antibiotic Stewardship

Presentation on the Report

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Working Group Members
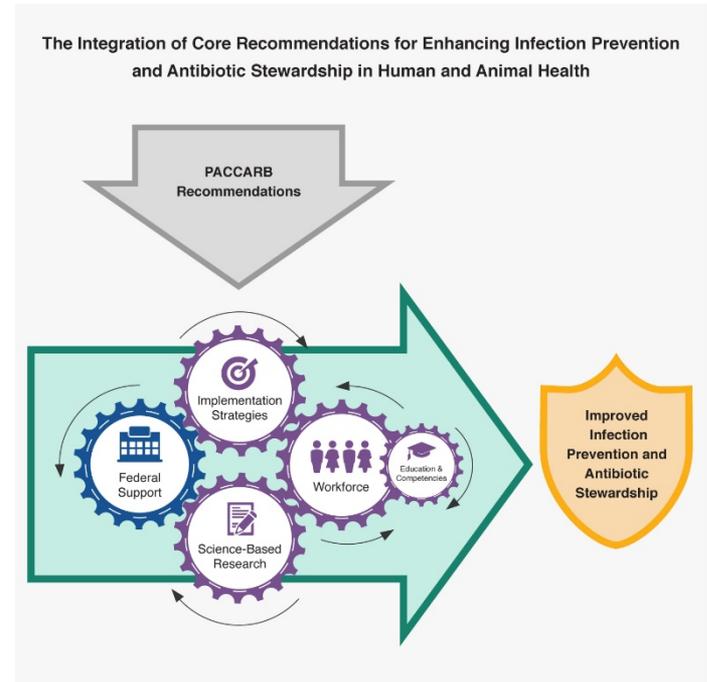
- Working Group Chairs:
  - Michael D. Apley, DVM, PhD, DACVCP
  - Sara E. Cosgrove, MD, MS

- Members divided into three subgroups:
  - Best Practices
  - Implementation
  - Workforce Education and Competencies

Best Practices	Implementation	Workforce Education and Competencies
Peter Robert Davies, BVSc, PhD – Co Lead	Helen Boucher, MD, FIDSA, FACP – Co Lead	Aileen Marty, MD, FACP – Co Lead
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David Atkins, MD, MPH	Anita Thomas, PharmD	
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James Cleeman, MD	Naomi Tomoyasu, PhD	
	Melissa Miller, MD, MS	
	Dale Burwen, MD, MPH	
	James Cleeman, MD	

The Report

- PACCARB identified common themes among subgroups given the connections among them.

- Seven recommendations were identified for human and animal health

- Body of the report provides explanations for each recommendation sub-bullets

The Integration of Core Recommendations for Enhancing Infection Prevention and Antibiotic Stewardship in Human and Animal Health

Recommendation One

I. Human Health

Support research on infection prevention and antibiotic stewardship.

(1)

1. Determine the IP&AS strategies that most impact clinical outcomes and antibiotic resistance in all healthcare settings, including post-acute and ambulatory care settings.
2. Evaluate current approaches and develop novel strategies for influencing provider behavior around antibiotic prescribing and infection prevention.
3. Determine optimal antibiotic treatments for common infections that best balances duration, efficacy, spectrum, and propensity to alter microbiome or drive the development of antibiotic resistance, and develop approaches to ensure that patients receive these treatments.
4. Evaluate reasons for variability in antibiotic prescribing across prescribers and regions and identify strategies to increase consistency with best recommended practices.
5. Determine the most effective strategies for IP&AS in vulnerable populations such as neonates, immunocompromised patients, and post-acute care residents.

II. Animal Health

Support research on infection prevention and antibiotic stewardship.

1. Correlate antibiotic use, infection prevention, and antibiotic stewardship with clinical outcomes and antibiotic resistance for companion animals and food animals.
2. Understand prescribing behaviors and antibiotic use patterns in food animals and companion animals.
3. Develop novel strategies and evaluate current approaches to influence provider behavior around antibiotic prescribing and infection prevention.
4. Evaluate current on-farm and production system interventions that target animal production environments as possible sources of antibiotic-resistant bacteria that may cause infection.

Recommendation Two

I. Human Health

Promote innovations for infection prevention and antibiotic stewardship.

1. Evaluate and implement innovative control measures that address the healthcare environment as a source of healthcare-associated infections (HAIs).
2. Evaluate effective and safe interventions to reduce carriage of *C. difficile*, multi-drug resistant organisms (MDROs), and other organisms causing HAIs.
3. Determine and implement optimal methods to detect, track, report, and control the regional spread of MDROs in all settings, including post-acute care facilities, especially long-term acute care hospitals (LTACHs) and skilled nursing facilities that care for patients on ventilators (vSNFs).
4. Assess and encourage the use of novel techniques to design, construct, and produce new products and pathways for treating, diagnosing, and preventing infections.

II. Animal Health

Promote innovations for infection prevention and antibiotic stewardship.

1. Develop alternative products for disease treatment, prevention, and control in animals, and for enhancing host immunity.
2. Assess and promote ongoing improvements and novel approaches to treat, diagnose, and prevent infections at the individual, flock, or herd-level in food animal populations.
3. Develop approaches for assessing the efficacy of IP&AS programs and their return on investment for the agricultural producer.

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Recommendation Three

I. Human Health

Improve metrics for infection prevention and antibiotic stewardship across all healthcare settings for benchmarking and public reporting.

1. Enhance existing metrics and develop new ones to assess and benchmark use and effectiveness of antibiotic therapy and the prevalence of antibiotic resistant organisms in all healthcare settings.
2. Require hospital data reporting to CDC's NHSN Antibiotic Use and Resistance (AUR) module to allow a comprehensive analysis of antibiotic use and resistance for the creation of benchmarks and assessments.
3. Enhance existing metrics and develop new ones to assess and benchmark HAIs in post-acute and ambulatory care settings.
4. Require submission of select data on HAIs by facilities providing post-acute and complex ambulatory care to CDC's NHSN system to allow for benchmarking.
5. Refine and expand public reporting of risk-adjusted benchmarked rates of antibiotic use and HAIs and use these data for incentives for improvement.

II. Animal Health

Perform comparative analyses of infection prevention and antibiotic stewardship data.

1. Assess the effectiveness of antibiotic therapy in veterinary settings.
2. Develop and apply programs to allow peer comparison across settings and regions to determine drivers of variability in antibiotic prescribing and ultimately identify strategies to control differences.
3. Devise new methods to collect antibiotic use data, in addition to sales data, and enable sector-specific comparative analysis.
4. Determine best approaches for the use of metrics as a basis for incentives and behavior modification to improve IP&AS practices.

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Recommendation Four

I. Human Health

Promote use of rapid diagnostic tests and diagnostic stewardship as mechanisms to reduce antibiotic misuse in both inpatient and outpatient settings.

1. Develop and encourage use of point-of-care (POC) tests with shorter turn-around times.
2. Assess logistics, cost-benefit, acceptability, and appropriate integration into clinical practice of POC testing for existing and future tests.
3. Determine and evaluate which tests are being used inappropriately, and develop interventions to support more appropriate testing.

4

II. Animal Health

Promote diagnostic testing to support antibiotic stewardship and infection control.

1. Develop more identification diagnostic tests and additional clinical breakpoints for animal pathogens.
2. Support greater availability of diagnostic tests and promote more efficient dissemination of results for veterinarian use.
3. Assess logistics, cost-benefit, and acceptability of POC testing.
4. Produce guidelines and recommendations for revised diagnostic strategies for use by clinical diagnostic laboratory support.

Recommendation Five

I. Human Health

Develop new federal policies, standards, and payment methods to support infection prevention and antibiotic stewardship.

1. Immediately finalize the Medicare conditions of participation (CoP) requirements for antibiotic stewardship programs, as proposed in June of 2016, in hospitals and critical access hospitals.
2. Enforce the Medicare CoP requirements for antibiotic stewardship and infection control programs in long-term care facilities.
3. Make reporting of antibiotic use measures a mandatory component of the Merit-based Incentive Payment System (MIPS) for outpatient prescribers.
4. Determine approaches to require and incentivize activities to improve IP&AS in complex ambulatory settings.
5. Develop reimbursement approaches for IP&AS activities for hospitals and post-acute care institutions.

II. Animal Health

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Develop new federal policies, standards, and guidelines to support infection prevention and antibiotic stewardship for all species.

1. Promote and encourage influential organizations and specialty boards to build on existing programs or establish and implement new standards and guidelines for IP&AS across the spectrum of animal species and veterinary practices.
2. Encourage the use of standardized medical records with an emphasis on electronic health records (EHR) that include detailed antibiotic use data.
3. Expand resistance surveillance activities to include animal pathogens and include the expansion of on-farm data collection and integration.
4. Support the new FDA Five-Year Blueprint that is designed to include and promote stewardship in companion animal practices and ensure that these programs are integrated with other federal strategies.

Recommendation Six

I. Human Health

Build resource capacity to implement actionable infection prevention and antibiotic stewardship programs.

1. Expand the role of and resources available to Hospital Improvement Innovation Networks (HIINs), and Quality Innovation Network-Quality Improvement Organizations (QIN/QIOs) to support IP&AS.
2. Expand the Antibiotic Resistance Solutions Initiative (ARSI) funding made available to the CDC to encourage the adoption and execution of IP&AS programs.
3. Determine staffing requirements in acute and post-acute care settings, especially LTACHs and vSNFs, and incorporate these as required elements for accreditation.
4. Institute and sufficiently fund student loan repayment and forgiveness programs for infectious disease (ID) physicians, ID pharmacists, and infection preventionists and ensure the government's continuation of the Public Service Loan Forgiveness Program (PSLF).
5. Develop funding for graduate medical, pharmacy, and nursing education that reinforce IP&AS.

6

II. Animal Health

Build resource capacity to implement infection prevention and antibiotic stewardship programs.

1. Ensure the government's continuation of the PSLF to encourage public service careers and build more expertise in AMR.
2. Financially support federal and state-based veterinary loan repayment programs to address shortages and help build an adequate veterinary workforce in rural areas.
3. Provide support for and establish more public-private partnerships to carry out IP&AS programs and leverage existing ones in academia and industry.

Recommendation Seven

I. Human Health

Expand, standardize, and improve delivery of infection prevention and antibiotic stewardship education and training at all levels of the healthcare workforce.

1. Require education and training accrediting bodies to include a model curriculum in IP&AS that is taught at all levels of healthcare and continuing worker education. Incorporate existing recommended core competencies.
2. Highlight hand hygiene in curricula at all levels of training as a foundational requirement for successful infection prevention. Recognize and apply successful tactics for achieving high hand hygiene compliance in healthcare settings.

7

II. Animal Health

Expand, standardize, and improve delivery of infection prevention and antibiotic stewardship education and training at all levels of the veterinary medical workforce.

1. Determine core antibiotic stewardship competencies across all species.
2. Create a model curriculum in IP&AS based on core competencies across all species.
3. Collaborate with veterinary medical accreditation organizations to ensure that veterinary medical curricula include an integration of AMR content including IP&AS and that students acquire the necessary competencies to deliver effective IP&AS programs.
4. Work with state veterinary boards to develop continuing education requirements that include IP&AS.

Discussion