



Investing in Best Practices for Asthma: A BUSINESS CASE

August 2010 Update

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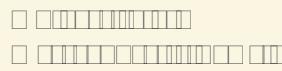
Laurie Stillman, MM,
Health Resources in Action



Produced for the
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Health Resources in Action (HRiA), in partnership
with the University of Massachusetts Lowell.



Health Resources in Action
Advancing Public Health and Medical Research



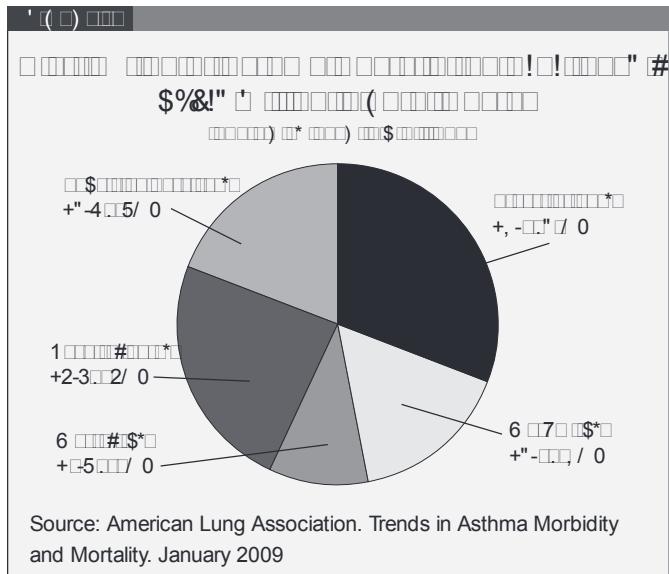


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An emergency department visit for asthma that did not result in admission to the hospital (adults and children)	\$691
A hospital stay for asthma (adult)	\$9,261
A hospital stay for asthma (child)	\$7,987

Source: Agency for Healthcare Research and Quality.
 Healthcare Cost and Utilization Project (HCUP). Rockville, MD. 2006.

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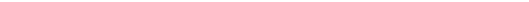
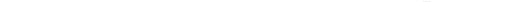
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The Asthma Return on Investment Calculator

In 2009, a user-friendly on-line tool was developed by Thomson Reuters for the federal Agency for Healthcare Research and Quality (AHRQ). Called the "Asthma Return on Investment Calculator," this tool can help health policy-makers, purchasers and insurers understand the financial implications of investing in asthma quality improvement programs that primarily focus on asthma education. The Calculator is based on evidence from 52 studies and is available free of charge through the AHRQ website:

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A 2003 randomized controlled trial calculated a positive return on investment when an Asthma Nurse Specialist provided group education sessions to adults in the clinic, by phone, and at home, as needed. The intervention cost \$186 and saved \$6,650 per patient in direct and indirect expenditures (\$36 saved for every \$1 spent).

Source: Castro M, et al. "Asthma Intervention Program Prevents Readmissions in High Health Care Users," American Journal of Respiratory Critical Care. 2003;168:1095-1099.

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Common Allergens	Common Irritants
• Cockroaches	• Cleaning chemicals
• Mice/Rats	• Sprays/scents
• Mold/mildew	• Environmental tobacco smoke
• Dust mites	• Indoor/outdoor fumes (gas/wood burning stoves, diesel engines)
• Household pets	
• Outdoor allergens	

What is Integrated Pest Management?

Integrated Pest Management (IPM) is a prevention-based approach to controlling cockroaches, rodents and other pests known to trigger and/or initiate asthma. IPM represents a safe and effective method for reducing pest allergen levels in homes, which in turn may reduce asthma symptoms. Relative to standard clinical approaches to asthma management, IPM education, services and basic supplies are cost-effective. For certain high-risk patients, professional pest management services are justified. For others, use of basic IPM supplies—without professional services—can cost-effectively reduce allergen levels and improve symptoms. For more details on the business case for investing in IPM, see a report for the Boston Public Health Commission, prepared by the Asthma Regional Council of New England, “The Role of Pest Control in Effective Asthma Management: A Business Case” By Brett and Stillman. Available at:

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Home-Based Environmental Interventions – Spectrum of Intensity



Examples of Interventions

Minor	Moderate	Major
<ul style="list-style-type: none">• Environmental assessment• Pillow & mattress covers	<ul style="list-style-type: none">• IPM supplies and services• Cleaning kits• HEPA furnace filters, vacuums, & air purifiers	<ul style="list-style-type: none">• Ventilation/heating retrofits• Re-roofing• Insulation• Removal of water damaged materials

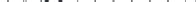
The effectiveness of home-based multi-trigger, multi-component environmental interventions, tailored to the individual, has been established by rigorous research. Examples of home-based environmental interventions above are arrayed along a spectrum of intensity as categorized by the CDC Task Force in their review of 12 studies that have evaluated costs. This figure is one model of the spectrum of intensity of interventions. Programs group interventions in a variety of ways, and some include additional components, such as professional services for carpet removal. Gaps in knowledge still remain about the independent contributions of particular components to the overall effectiveness of a multi-faceted intervention.

Sources: (1) Nurmagambetov T, et al. Economic Evaluation of Home-Based Environmental Interventions to Reduce Asthma Morbidity. CDC presentation on EPA Communities in Action for Asthma Friendly Environment, Economic Evaluation of Home-based Environmental Interventions webinar. December 2, 2009. (2) CDC Task Force on Community Preventive Services. "Asthma Control: Home-based Multi-trigger, Multicomponent Environmental Interventions Summary Evidence Tables – Economic Review." Available at: <http://www.thecommunityguide.org/asthma/supportingmaterials/SETEcon.pdf>. Accessed March 30, 2010.

The Inner City Asthma Study demonstrated that a moderate intensity home-based environmental intervention program for high-risk children, delivered by an environmental counselor over the course of 5 visits, cost \$28 for each symptom-free day gained (total program costs \$1469/person).* These expenditures are well within the range of what payers have determined are “reasonable” costs for medications that achieve similar health outcomes, and far less than Xolair (omalizumab), which costs \$523 per symptom-free day for patients with moderate-severe, uncontrolled allergic asthma.**

Sources: *Kattan M, et al. "Cost Effectiveness of a Home-based Environmental Intervention for Inner-city Children with Asthma," Journal of Allergy and Clinical Immunology. 2005; 116(5):1058-1063. **Oba Y and Slazman GA. "Cost-effectiveness Analysis of Omalizumab in Adults and Adolescents with Moderate-to-Severe Allergic Asthma," Journal of Allergy and Clinical Immunology. 2004; 114(2): 265-269.

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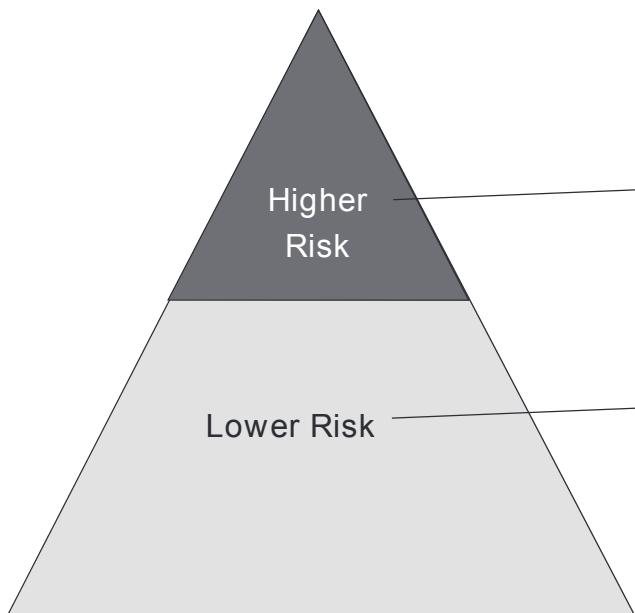
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Patient Intervention Stratification Model



Patient Characteristics:

Asthma Diagnosis, plus:

- 1 or more ED visit, hospitalization or unscheduled physician visit in 6 months;
 - >3 rescue medications in 6 months;
 - activity limitations;
 - classified as moderate or severe persistent

Intervention: Moderate Intensity (see Figure 6)

Patient Characteristics:

Asthma Diagnosis, plus:

- no ED visits or hospitalizations;
 - few activity limitations;

- classified as mild severity

Intervention: Low Intensity (see Figure 6)

The Value of Community Health Workers

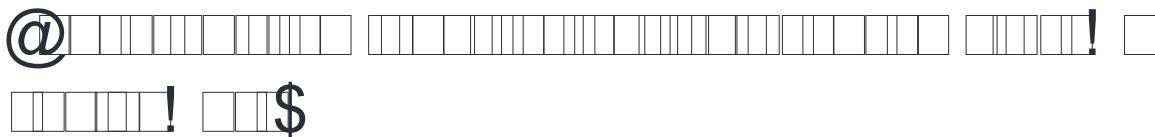
Community Health Workers (CHWs), or community health advocates and educators who make home visits, can be important members of an asthma team. Not only are CHWs effective, they also cost less than nurses, medical social workers, or respiratory therapists. The recent results from the Seattle-King County Healthy Homes II Project add to the body of evidence regarding the value of using CHWs to deliver home-based environmental intervention programs for asthma as well as to complement clinic-based asthma education programs during the home visit.* CHWs also serve as important clinic liaisons to enhance patient access to health professionals.* Though providers with more training may be needed in certain situations, CHWs have emerged as effective providers of basic health interventions in many cases because of their ability to bridge the gap between community members and health institutions, often due in part to shared cultural backgrounds with program participants. Randomized controlled trials have consistently shown that when appropriately trained and supervised, CHWs can provide home visits for education and environmental allergen reduction that result in positive health outcomes, including fewer asthma symptoms, daytime activity limitations, and emergency and urgent care visits.**

Sources: *Krieger J, et al. "A Randomized Controlled Trial of Asthma Self-Management Support Comparing Clinic-Based Nurses and In-Home Community Health Workers," Archives of Pediatric and Adolescent Medicine. 2009;163(2):141-149. **Postma J, et al. "Community Health Workers and Environmental Interventions for Children with Asthma: A Systematic Review," Journal of Asthma. 2009;46:564-576.

Model Cost-Effective Interventions
Asthma Education and Environmental Interventions

LOW INTENSITY FOR LOWER RISK PATIENTS	MODERATE INTENSITY FOR HIGHER RISK PATIENTS*												
<p>SETTING Group or Individual; Clinic or Phone-Based (1+ visits)</p> <p>STAFFING Examples include: Certified Asthma Educator, Registered Nurse, Mid-level Practitioner, Respiratory Therapist, Licensed Clinical Social Worker, Chronic Disease Educator or others well-trained in asthma care and education.</p> <table> <thead> <tr> <th>EDUCATION</th> <th>SERVICES</th> <th>SUPPLIES</th> </tr> </thead> <tbody> <tr> <td>Address asthma physiology; medical self-management (use of Asthma Action Plan; & control of environmental triggers)</td> <td>Smoking cessation; referrals to other specialists, programs & resources</td> <td>Peak flow meters; spacers; mattress/ pillow covers</td> </tr> </tbody> </table>	EDUCATION	SERVICES	SUPPLIES	Address asthma physiology; medical self-management (use of Asthma Action Plan; & control of environmental triggers)	Smoking cessation; referrals to other specialists, programs & resources	Peak flow meters; spacers; mattress/ pillow covers	<p>SETTING Individual; Home-Based (1-5 visits)</p> <p>STAFFING Same as for lower risk patients, however the home environmental intervention can be conducted by a Community Health Worker or Environmental Counselor.</p> <table> <thead> <tr> <th>EDUCATION</th> <th>SERVICES</th> <th>SUPPLIES</th> </tr> </thead> <tbody> <tr> <td>Same as low intensity</td> <td>Same as low intensity as well as case management; in-home environmental assessment; professional IPM or cleaning services if indicated</td> <td>Same as low intensity and other environmental trigger reduction supplies as needed (e.g. basic IPM supplies, HEPA vacuums, air filtration)</td> </tr> </tbody> </table>	EDUCATION	SERVICES	SUPPLIES	Same as low intensity	Same as low intensity as well as case management; in-home environmental assessment; professional IPM or cleaning services if indicated	Same as low intensity and other environmental trigger reduction supplies as needed (e.g. basic IPM supplies, HEPA vacuums, air filtration)
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*Some patients may benefit from higher intensity interventions not listed here. These include significant structural remediation (e.g. repairing significant leaks, carpet removal, new ventilation systems, removal of water damaged material). While these interventions effectively reduce exposure to environmental triggers associated with asthma, there is not evidence of cost-effectiveness when they are compared to standard asthma interventions/treatments. However, such services should be considered in exceptional circumstances where asthma remains out of control despite adherence to medication and provision of environmental trigger supplies and services.



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The Connecticut Department of Public Health was one of the first state health departments to develop a state-wide home visiting asthma program called Putting on Airs. The program provides home-based education and identification and mitigation of environmental triggers. Through a train-the-trainer approach, a majority of communities in the state now have access to these asthma services. However, the Putting on Airs program is an example of the many home-based asthma education and environmental intervention programs whose services run the risk of termination unless more sustainable sources of funding can be identified.

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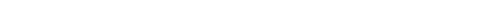
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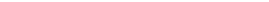
Expanding Your Health Plan's Asthma Management Program: Three Steps to Get Started

1. Consider a pilot home visiting program. A pilot can help identify the most effective approach given the constraints and resources available to your organization and potential partners. While minimizing the initial costs, a successful pilot program can demonstrate cost-effectiveness and justify larger-scale investment.
 2. Leverage the capacity of community partners to provide additional asthma management services. Community-based organizations, health departments, hospitals, and visiting nurse associations, among others, have the capacity to work in partnership to provide additional services to your members. Leverage these organizations' capacities to expand the asthma management services for your members, and jointly establish rigorous mechanisms for accountability and quality improvement.
 3. Become a model: track your effectiveness. Before the program begins, calculate baseline rates and have a plan in place to monitor key outcome measures, including cost effectiveness. Be sure to publish and share the news of your program's successes and lessons learned.

An excellent guide for health plans that are interested in developing a home visiting program is the U.S. EPA's Implementing an Asthma Home Visiting Program: 10 Steps to Help Health Plans Get Started. See:

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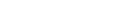
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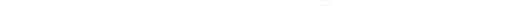
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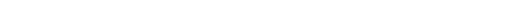
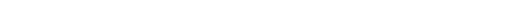
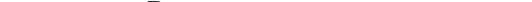
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Why Should Insurance Pay for Home-based Asthma Education and Environmental Trigger Services and Supplies

The impetus for national Health Care Reform has been to improve clinical outcomes and to control the unsustainable rise in costs. Caring for chronic diseases comprises 75% of U.S. health care expenditures. Effective system reforms will entail new delivery and payment strategies that are demonstrated to prevent unnecessary expensive urgent care. The health care system needs to acknowledge that certain populations and diseases need new forms of community interventions to enhance value and quality care. For asthma, which has a clear environmental component, reimbursing a range of trained providers and professionals to assess the patient's home for triggers and offering basic environmental and education services can be as cost effective as many medications—and is an evidence-based asthma management strategies for patients with persistent disease symptoms.

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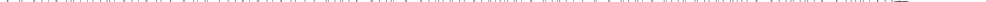
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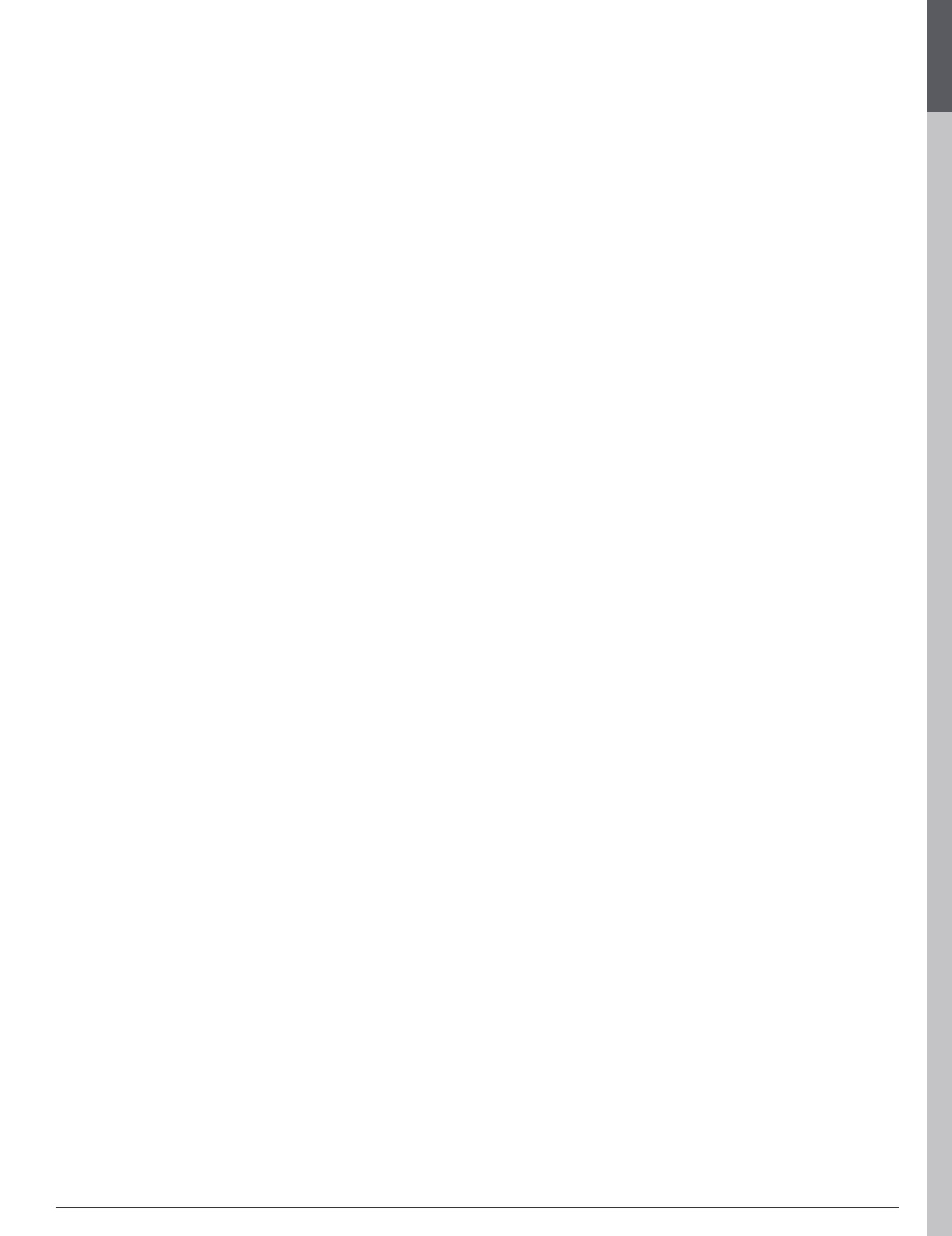
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