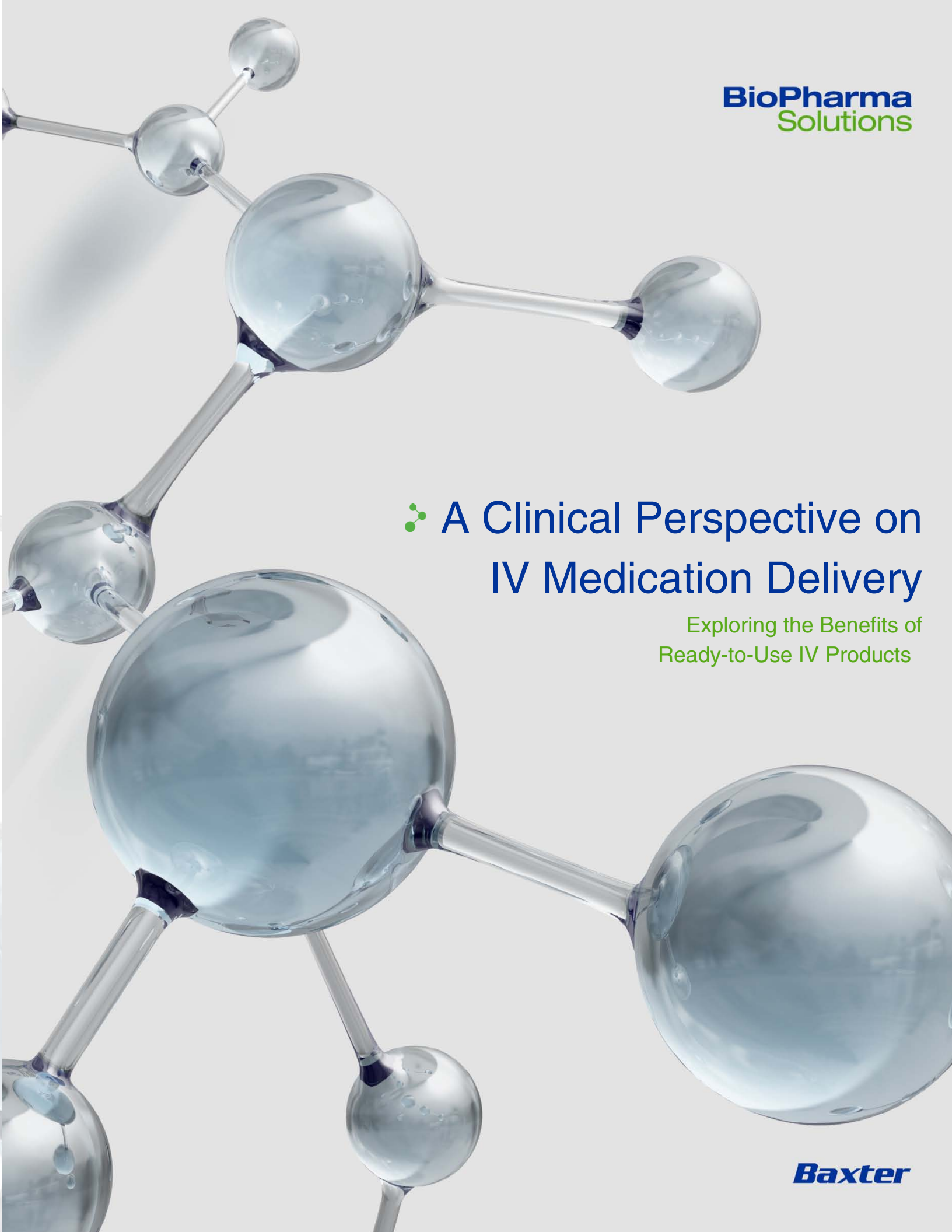

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A Clinical Perspective on IV Medication Delivery

Exploring the Benefits of Ready-to-Use IV Products

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A Clinical Perspective on IV Medication Delivery

Management of medication delivery through intravenous (IV) administration is a complex and challenging task for pharmacists. Many considerations influence IV administration including patient safety, medical efficacy, budget implications and labor utilization (to name a few). The percentage of doses delivered through IV administration varies from hospital to hospital and is also influenced by the care setting. What is universal, however, is the importance of managing this delivery method.

The information provided reflects research conducted assessing medication delivery practices and preferences. Due to the complex nature of medication delivery and the numerous factors that influence clinical practice, this information is intended to be directional in nature. Additional specific market research would be required to assess the particular dynamics of a molecule in its therapeutic class.

Changing Hospital Environment

A panel consisting of hospital pharmacists[1] was interviewed in August 2010 to:

- Assess the current operating environment within their respective hospitals and hospital systems
- Understand the evolving requirements relating to IV administration of medication
- Learn from the panelists' experience in identifying and implementing potential solutions

Not surprisingly, a key priority for the panelists was a focus on the financial health of their institutions. The evaluation and optimization of the total cost associated with positive patient outcomes was a shared priority.

Process Improvement Focus

One pharmacist interviewed spoke of his institution's practice of using work stream and labor utilization specialists who provide industry benchmarks in order to create metrics to evaluate the institution's performance in key areas. These metrics have been incorporated into key performance indicators which are vigorously monitored by the management team. Another pharmacist highlighted process improvement efforts in her institution that focused on the flow of patients between care settings within the hospital and between the hospital and long-term care facilities. Understanding the interdependencies refined an aspect of their patient safety initiatives by creating processes to govern the transfer of a patient's care. Improvement initiatives were driven by each hospital's particular circumstance, but all of the panelists believed that a holistic assessment of the delivery of patient care is required.

This focus on process improvement and systemic understanding was particularly important to the pharmacists interviewed as it applied to the delivery of medication through IV administration. The majority of medication delivered is through oral administration, which provides benefits to the patient and the hospital by reducing complexity. Several pharmacists interviewed felt that oral administration from a pharmacy perspective was less complex than IV administration. One of the pharmacists interviewed said, "If an oral dose is being administered, the product is provided in such a

way that manipulation is not required. All aspects of patient safety are maintained of course--compatibility, dosage etc -- but I have the end product, ready-to-use". This is not the case if the medication is provided in an admixture dependant dosage form; introducing complexity for the hospital pharmacy to manage and optimize.

Current Practices

Medication admixture is typically performed by IV technicians who are monitored by a licensed pharmacist. The pharmacists interviewed noted that much of their time was spent on activities associated with IV admixture and the oversight required to ensure the end product is prepared correctly. Differing ratios exist, in accordance with state and institution regulations, of pharmacy technicians monitored by a licensed pharmacist during IV admixture preparation. These differences notwithstanding, all panelists agreed that the number of verification steps in IV admixture as compared to manufacturer prepared IV containers was an important factor in optimizing labor.

"Allows the pharmacist to focus on patient care, not oversee manufacturing processes"

Clear Benefits

While there are varying factors determining feasibility of a particular IV medication's ability to be provided in a ready-to-use format (also known as premix), the interviews explored the benefit of ready-to-use without discussion of the potential development challenges. All pharmacists interviewed agreed that premix medications provide a clear benefit in reducing complexity and most closely mimic the oral dosing process because the premixed IV medication is available in the final form that will be administered to the patient. One pharmacist interviewed said in his hospital system it is practice to implement as many premixed IV medications as are available in order to allow the pharmacist to "focus on patient care, not oversee manufacturing (admixture) processes". This sentiment was echoed by other pharmacists interviewed; increasing direct patient interaction was a key focus of their pharmacy related process improvement initiatives.

The interviews also illustrated additional benefits relating to premix medications. These included:

- Labeling that reflects the final product as manufactured
- Potential reduction in process-related contamination
- Reducing the possibility of error if a common system of administration is in place for clinicians

Specific to labeling, one of the pharmacists shared that he had created and implemented a patient-specific label that did not obscure the manufacturer's label, but rather, was placed in such a way to provide another "check" for the clinician to ensure they were administering the prescribed medication.

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Risk of Contamination

The potential risk of contamination within the IV admixture process was compared to manufacturer prepared IV medications. There was agreement that the "human element" introduced by IV admixture provided an opportunity for error and contamination. All pharmacists interviewed took various considerations into account as they took steps to reduce the likelihood of admixture related contamination; labor availability and hospital infrastructure were commonly cited as important factors. One of the pharmacists interviewed had considered implementation of a clean room environment in order to reduce the likelihood of admixture related contamination but the infrastructure of the hospital could not support this approach; therefore he has been actively implementing manufacturer prepared IV medications to address this potential issue.

Administration to the Patient

Administration of all medications, IV or oral, must be constantly monitored by the entire clinical staff. Preventing medication error is of paramount concern and the focus of numerous oversight and process improvement initiatives. The pharmacists agreed that providing a common delivery system, rather than aspects of differing systems, provided a benefit from an IV administration perspective. One pharmacist said, "It can be challenging for staff to correctly utilize differing types of IV administration products on a drug by drug basis." Consolidation of premix medications within a common system was a goal for this panelist.

Conclusion

In summary, premixed medications provided clear benefits for all of the panelists. Using premix IV products allowed for increased pharmacy participation in direct patient care and supported their process improvement initiatives. Furthermore, the premix solution offered a means to achieve their common objective - providing safe, effective and high-quality patient care.

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[1]Source: Panel consisted of interviews conducted with hospital pharmacists in August 2010.

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