DISRUPTIVE INNOVATION:
ADVANCING PATIENT PROGRESSION THROUGH NEW APPROACHES TO BLOOD DRAWS

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SUMMARY:

Patient progression and experience is a priority area of emphasis for leading hospital systems. This piece explores their strategic importance and emerging new standards for in-patient blood collection that may help advance this discipline.

ABOUT THE AUTHOR:

Jacqueline G. Somerville, PhD, RN, FAAN is an accomplished nurse executive with over 30 years of progressive nursing and health care leadership. She brings her passion for the human experience of health and illness and quality and safety to all that she does, including her research which described and quantified patients' perceptions of feeling "known" by their nurses.

She is a committed leader of inter professional teams to advance the quadruple aim-health, lower cost, an exceptional human experience for patients and communities and an engaged workforce. She is currently a Faculty Associate with the Watson Caring Science Institute and Clinical Research Assistant Professor at Boston College William Connell School of Nursing. She has served patients, families and inter professional staff in a variety of roles including Chief Nursing Officer and Senior Vice President Patient Care Services at Brigham and Women's Hospital, Associate Chief Nurse at Massachusetts General Hospital, Interim Chief Nursing Officer and Vice President Patient Care Services and Director of Preoperative Nursing at Beth Israel Deaconess Medical Center, Senior Consultant for the Center for Case Management and Vice Chair for Surgical Nursing at New England Medical Center.

A graduate of Boston College with a Bachelor of Science in nursing, she received her Master of Science degree in nursing administration from Boston University and her PhD in nursing from Boston College. She is a member of the International Association for Human Caring and a reviewer for the journal, a member of the American Organization of Nurse Executives, The Organization of Nurse Leaders of Massachusetts and Rhode Island, Sigma Theta Tau and the American Nurses Association. She is a certified Caritas Coach from the Watson Caring Science Institute.

PATIENT PROGRESSION

Patient progression is an emerging strategic initiative designed to ensure that care is advanced in a timely manner, moving patients when clinically indicated to the appropriate level and venue of care. Unfortunately, these efforts can often focus on process efficiency versus clinical effectiveness. This framing of procedures as individual tasks that must be completed can cause caregivers and institutions to sometimes lose sight of the larger goal of patient-centered care outcomes and recovery. Health systems must be diligent in identifying ways to better align patient progression and patient experience in support of improved outcomes.

IMPORTANCE OF BLOOD DRAW TO PATIENT PROGRESSION

The emergence of new in-patient blood draw standards and technologies is providing one such opportunity for alignment. Historically, blood draws have been performed by a variety of teams across a hospital at various times of the day. By only focusing on the performance of the task of venipuncture vs. the human experience of care, clinical quality, and patient progression, we may risk impacting clinical efficacy and patient experience. Creative care delivery models and technologies are emerging that have the potential to close this gap.

HEMOLYZED ED BLOOD SAMPLES

One could argue that all patient blood draws are time sensitive and critical to patient progression because they guide clinical decision-making. But perhaps nowhere is this more obvious than in the emergency department. According to McHugh et al (2011), nearly half of U.S. emergency departments report operating at or above capacity, and 9 out of 10 report holding admitted patients awaiting inpatient beds. Emergency department overcrowding impacts the human experience of patients and communities, quality of care (Sun et al., 2013), referral streams and revenue in instances where patients leave without being seen.

Taking blood during an IV start from a newly inserted angiocatheter before fluid is run, though thought to be efficient and humane, is the biggest factor contributing to high hemolysis rates in emergency departments. In a meta-analysis, Lippi et. al. (2013) found that the vast majority of hemolyzed specimens came from emergency departments with a prevalence rate of 7-12% as compared to a 3% incidence in other settings. Pre-analytic error or errors that occur in the ordering or handling of specimens accounts for up to 75% of total laboratory errors, with hemolysis accounting for 40-70% of those unsuitable specimens (Green, 2013).

Hemolyzed samples, in addition to creating delays in patient recovery, require redraws and Green (2012) estimates add a cost of $337 per hemolyzed ED sample as well as countless lost hours in managing the costly emergency department asset. In addition to effects on emergency department flow, patients admitted on days with high ED crowding experienced greater odds of inpatient death, longer hospital length of stays and increased costs per admission (Sun et al., 2013).

TIMING INPATIENT BLOOD DRAWS FOR MAXIMUM EFFICIENCY

Poor blood draw standards in other parts of a hospital can also slow patient progression and hinder patient experience. For example, draws that are not tightly aligned with medication administration can impact outcomes. Time to treat with an antibiotic elongates or a peak and trough not tightly aligned with the actual medication administration can negate the value of the lab.

Yet, the one quality metric frequently tracked and reported related to blood draws is lab turnaround time which according to Hawkins (2007) is the time from sample registration to results reporting and for routine labs is recommended to be 60 minutes or less. What is the significance of this metric as it relates to therapeutic laboratory values that are time sensitive and require a great deal of coordination between laboratory, nursing and pharmacy personnel? Some drugs have a narrow therapeutic index between toxicity and effectiveness.

Weight based nomograms and nurse driven titration protocols have demonstrated significant improvement in reaching therapeutic levels more quickly in patients initiated on IV anticoagulants (Bolcezak et al, 2000). Much of this is dependent upon the timeliness of blood draws, often every 6 hours. Even more challenging is the management of patients requiring peak and trough levels to ensure that the dose of medication is not too high or too low. Blood draws in these cases must be tightly linked to drug administration times which can be impacted by many variables including access to the drug and access to the patient who may travel off the unit requiring a last-minute change in medication administration time.

Challenges aligning drug administration and draw times when relying solely on a centralized phlebotomy team can result in delays in advancing care. One study (Morrison et al, 2012) reported that vancomycin trough levels were drawn early 41.3 percent of the time, yielding significantly higher average drug concentrations than correctly timed samples. These results led clinicians to decrease a dose, discontinue the medication or hold a dose, all clinical decisions based upon inaccurate information.

EMERGING BLOOD DRAW STANDARDS AS PATIENT PROGRESSION ENABLERS

By exploring local team composition and empowering local teams with the authority and technology to draw these time sensitive labs specimens, the potential exists to significantly decrease patient time to optimal, therapeutic drug levels decreasing length of stay and advancing patient recovery. Because phlebotomy skill is linked to task repetition, such decentralization of select draws to a considerably larger workforce that will use the skill less frequently is not without its challenges.

Fortunately, new technology has emerged that supports blood draws from existing indwelling intravenous catheters. This new technology has the potential to decrease the cost of training and maintenance of skills required to draw blood, to decrease the discomfort and disruption inflicted on the patient by venipuncture, and to decrease the risk of needle stick injuries to staff.

These emerging technologies are designed to enable efficient and high-quality blood draws for whichever role is tasked with collecting the sample. Whether it is a phlebotomist more closely embedded in the local team or a support staff member or nurse trained in draws, creative models are emerging to more effectively deal with time sensitive blood draws. These models will require collaboration of clinician and laboratory colleagues, breaking down silos and acknowledging shared accountability in the process to each other and most importantly to the patient.

Finally, one wonders if local support staff that are more familiar with their patients conducted a greater percentage of draws, whether they might question or avoid unnecessary routine draws more frequently. This reduction in draws could potentially help advance blood conservation, limit over-utilization, and improve both patient progression and the overall patient experience. Questions that might be considered in patient progression huddles include “How will this result change our course of action?” or “What is the value of an additional draw when the result has consistently been normal and no change in patient condition has been noted?” Centralized phlebotomists are not expected or trained to be aware of the clinical context within which their discreet task is performed. If that context was shared and the workflow was more visible to the local team, does the possibility of greater dialogue about the value of “routine” draws exist and enable more timely patient progression?

In conclusion, when we deconstruct procedures such as venipuncture into discreet tasks, we risk overemphasizing the completion of a task and can overlook the sequence or time when it is conducted, potentially hampering our ultimate patient progression or recovery goals. By embracing new blood draw standards and technologies, we can turn this potential procedural hindrance into an enabler of patient progression and experience.

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