
Integrating Family Medicine, Nursing, Midwifery, Physical Therapy, Critical Care, Emergency Services, And Anesthesia for Comprehensive Patient Management

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Abstract:

Integrating various healthcare disciplines such as family medicine, nursing, midwifery, physical therapy, critical care, emergency services, and anesthesia is essential for providing comprehensive patient management. Each discipline brings unique expertise that, when combined, enhances patient care continuity, improves health outcomes, and fosters a holistic approach to treatment. For instance, family medicine serves as a primary contact point, coordinating care and ensuring that patient needs are met across different services. Midwives provide specialized prenatal and postnatal care, while nurses play a pivotal role in patient monitoring and education. Physical therapists contribute to rehabilitation, addressing movement issues that may arise from medical conditions or surgical interventions. Furthermore, the integration of critical care, emergency services, and anesthesia facilitates timely interventions in acute situations. In critical care, a multidisciplinary team can closely monitor and treat complex patients, ensuring that every facet of their health, from physical stabilization to emotional support, is addressed. Emergency services are critical for managing urgent health crises, and collaboration with anesthesiologists ensures safe pain management during procedures. By fostering interdisciplinary communication and teamwork, healthcare providers can develop patient-centered care plans that are responsive, efficient, and tailored to the individual needs of patients.

Keywords: Integrated Care, Family Medicine, Nursing, Midwifery, Physical Therapy, Critical Care, Emergency Services, Anesthesia, Patient Management, Multidisciplinary Teams, Holistic Approach, Care Coordination, Health Outcomes

Introduction:

In contemporary healthcare, the complexity of patient needs has grown significantly, necessitating a shift from fragmented care models to more integrated approaches that encompass a wide array of professional specialties. Among the diverse disciplines in healthcare, family medicine, nursing, midwifery, physical therapy, critical care, emergency services, and anesthesia represent crucial components in delivering holistic patient

management. Each of these fields brings unique skills and perspectives that, when synergistically combined, can enhance patient outcomes and experience. This research aims to explore the integrative strategies employed across these disciplines to achieve comprehensive patient management, highlighting the critical role of interdisciplinary collaboration in promoting effective care delivery [1].

The healthcare landscape is rapidly evolving, driven by advancements in medical knowledge, technology, and an increasingly diverse patient demographic. This evolution has exposed the limitations of traditional patient management systems, characterized by a compartmentalized approach where episodes of care are delivered in isolation. Such fragmentation often leads to gaps in care continuity, reduced patient satisfaction, and, ultimately, suboptimal health outcomes. A profound understanding of how interdisciplinary collaboration can bridge these gaps is paramount to fostering a patient-centered environment that prioritizes comprehensive care [2].

Integrating various healthcare specialties is not merely a response to the complexities of modern medical practice; it is a proactive approach to addressing social determinants of health, ensuring equitable access to care, and enhancing the overall quality of healthcare services. Family medicine serves as a cornerstone for continuity of care, emphasizing whole-person management and long-term relationships with patients. When combined with nursing, which encompasses both patient care and advocacy, a robust support system emerges that can navigate patients through varying levels of healthcare needs, from preventive measures to acute interventions [3].

Midwifery adds another vital dimension to comprehensive patient management, particularly in maternal and reproductive health. With a focus on normalizing childbirth and promoting healthy outcomes for mothers and infants, midwives collaborate seamlessly with family physicians and nurses to provide a continuum of care that prioritizes safety, education, and emotional support. Such integrative frameworks are particularly crucial in delivering care to vulnerable populations, ensuring that diverse perspectives and expertise are harnessed to address the multifaceted aspects of patient health [4].

Physical therapy plays a transformative role in the continuum of care, particularly in rehabilitation following illness or injury. By working closely with physicians, nurses, and other health professionals, physical therapists contribute to proactive recovery strategies that enhance mobility, reduce pain, and improve the quality of life for patients. This collaboration is especially beneficial in environments such as critical care, where patients

may require extensive rehabilitation services to regain functionality [5].

Critical care and emergency services represent the acute response mechanisms within the healthcare system, tasked with addressing life-threatening conditions. The integration of these services with other areas, such as anesthesia, is essential to optimizing patient management. Anesthesiologists not only administer medications for surgical procedures but also play a critical role in pain management and overall perioperative care. Their collaboration with family medicine and nursing personnel ensures that patients receive well-rounded support, from preoperative assessment through postoperative recovery [6].

In exploring the integration of these diverse disciplines, it is imperative to recognize the roles of communication, technology, and continuing education as foundational elements that facilitate effective collaboration. Interdisciplinary communication fosters a shared understanding of patient needs, promotes mutual respect among healthcare professionals, and ultimately leads to improved patient outcomes. Furthermore, the advent of technology, including electronic health records and telehealth platforms, provides the necessary infrastructure for information sharing and coordinated care efforts across disciplines [7].

This research will delve into case studies and existing models of integrated care that successfully merge family medicine, nursing, midwifery, physical therapy, critical care, emergency services, and anesthesia. By examining the operational frameworks, strategies for effective communication, and the associated clinical outcomes of such approaches, this study aims to illuminate best practices that can serve as a blueprint for future initiatives in integrated patient management. The ultimate goal is to underscore the importance of interdisciplinary collaboration in overcoming the challenges inherent in today's healthcare environment, promoting sustainable practices that enhance the quality of care and, by extension, the health of populations served [8].

Roles and Contributions of Family Medicine in Patient Management:

Family medicine is a cornerstone of healthcare systems around the world, characterized by its comprehensive and holistic approach to patient

management. As the first point of contact within the medical system, family medicine practitioners, commonly known as family physicians, serve a crucial role in the continuity of care [9].

Family medicine emphasizes the importance of accessibility and continuity of care. Family physicians provide medical services that encompass a wide range of health issues across all age groups, regardless of gender or socioeconomic status. This accessibility ensures that patients can receive timely medical attention for acute illnesses and ongoing management for chronic conditions [10].

A significant aspect of family medicine is the establishment of a long-term patient-physician relationship, which fosters trust and open communication. This continuity allows physicians to gain an in-depth understanding of their patients' medical histories, lifestyles, and family dynamics, enabling them to provide care that is tailored specifically to individual needs. Consequently, family medicine enhances the efficacy of patient management by allowing for a broader view of health, wherein a physician can recognize patterns and develop personalized treatment strategies [11].

Prevention is a hallmark of family medicine, with family physicians often playing a key role in implementing preventive health measures. This proactive approach includes routine screenings, vaccinations, and wellness examinations that can detect health problems before they escalate into more serious conditions. Family medicine practitioners educate patients on healthy lifestyle choices such as diet, exercise, and smoking cessation, thus reducing risk factors for chronic diseases like diabetes, heart disease, and cancers [12].

Moreover, family physicians are instrumental in developing preventive care strategies that consider patients' unique backgrounds, cultural influences, and social determinants of health. By taking these factors into account, family medicine promotes tailored prevention programs that resonate with the individual needs and values of patients, making it more likely for them to engage in and adhere to recommended health behaviors [13].

Chronic diseases pose a significant challenge to modern healthcare, accounting for a large proportion of healthcare expenses and mortality rates. Family medicine offers a patient-centered approach to

managing these conditions, which often requires ongoing monitoring and adaptability to changing patient needs [14].

Family physicians excel in managing complex health situations, as they can oversee multiple comorbidities simultaneously. For instance, a patient with diabetes may also be dealing with hypertension and obesity. A family physician can coordinate care among different specialties while maintaining a holistic view of the patient's health. This comprehensive management approach not only improves patient outcomes but also minimizes the need for specialist referrals, resulting in better resource utilization within the healthcare system [15].

Additionally, family medicine emphasizes the importance of health literacy. Family physicians equip patients with the knowledge and skills to understand their conditions and navigate the healthcare system effectively. In doing so, they empower patients to take an active role in their management plans, which can significantly enhance adherence to treatment regimens and improve health outcomes [15].

Family medicine places a strong emphasis on education, acknowledging that informed patients are more likely to engage in their own care. Family physicians spend considerable time educating patients about their health conditions, treatment options, and preventive practices. Through effective communication, practitioners can dispel misconceptions, clarify medical jargon, and develop individualized education plans suited to patients' literacy levels and learning preferences [15].

Patient education extends beyond individual appointments, encompassing community outreach initiatives that focus on public health awareness. Family physicians often participate in community events, offer workshops, and collaborate with schools or local organizations to improve health awareness and prevention in their communities. These initiatives not only foster a healthier environment but also help to build stronger community ties, enhancing the collective well-being of the population [16].

Mental health is an integral component of overall well-being, and family medicine acknowledges this by incorporating mental health care into primary health services. Family physicians are often the first

to recognize early signs of mental health issues, such as anxiety and depression, given their ongoing relationships with patients. By addressing these concerns promptly, family physicians can facilitate referrals to mental health specialists when necessary or provide appropriate interventions themselves [16].

Moreover, family medicine recognizes the significance of family dynamics in health outcomes. Family physicians often take into account the social and familial context of their patients, understanding that relationships within a household can profoundly influence health behaviors and outcomes. By involving families in the care process, family physicians can foster supportive environments conducive to healing and recovery [17].

Family medicine practices are often entrenched within their communities, leading to a unique understanding of local health needs and challenges. This engagement helps physicians implement tailored interventions that address specific public health concerns unique to their populations. For example, in areas facing high rates of obesity, family medicine practitioners might conduct workshops on nutrition and exercise, while in regions with elevated prevalence of infectious diseases, they might organize vaccination drives or educational seminars [17].

Furthermore, family physicians frequently collaborate with community organizations, schools, and government entities to advocate for health policies that address social determinants of health. Such collaborative efforts enhance the overall health of the community and improve resources for patient management, contributing to a sustainable healthcare model [17].

The Interdisciplinary Approach: Nursing and Midwifery Collaboration:

In modern healthcare, the complexity of patient needs necessitates a collaborative and multidisciplinary approach. This is particularly true in environments such as hospitals where patients often present with multifaceted challenges that require the combined input of various health professionals. A comprehensive patient management strategy that incorporates nursing, midwifery, physiotherapy, critical care, emergency services, and anesthesia can enhance patient

outcomes, improve safety, and ensure holistic care [18].

Healthcare systems are increasingly recognizing that the complexity of medical conditions and the diversity of care required can no longer be adequately addressed through isolated practice. Patients today may present with co-morbid conditions, requiring input from multiple specialties for effective management. A multidisciplinary approach allows for the development of comprehensive treatment plans that encompass different aspects of care, from preventative measures to acute intervention and rehabilitation [18].

The multidisciplinary model is particularly relevant in critical care environments and emergency services, where timely and coordinated care can significantly impact patient survival and recovery. For instance, trauma patients may require immediate interventions from surgeons, anesthesiologists, critical care nurses, and physiotherapists. Each professional brings their expertise to the table, ensuring that all facets of the patient's condition are addressed promptly and effectively [19].

Nurses are often the frontline caregivers in healthcare systems and play a crucial role in the multidisciplinary approach. Their responsibilities include patient assessment, coordination of care, management of treatment plans, and providing education and support to patients and their families. In a multidisciplinary team, nurses act as the linchpin who understands the intricacies of patient needs and communicates them to other members of the team. This role is vital in ensuring continuity of care and in facilitating smooth transitions, for instance, between the emergency department and critical care units [19].

Additionally, nursing encompasses various specialties, including pediatric nursing, geriatric nursing, and oncology nursing, each with specific skills and knowledge that enrich the multidisciplinary team. By incorporating nursing expertise, patient management becomes not only more comprehensive but also more personalized [20].

Midwifery is a specialized field that emphasizes the reproductive health of women and newborns. Midwives are pivotal in providing prenatal, delivery, and postnatal care, and their contributions

are especially relevant in multidisciplinary teams during childbirth. They work closely with obstetricians, anesthetists, and neonatal nurses to ensure that both the mother and child receive optimal care during one of the most critical periods in their lives [20].

Moreover, midwives play a significant role in educating families and supporting healthy practices that promote maternal and infant health. Their inclusion in a multidisciplinary approach ensures that the emotional and psychological aspects of care are not overlooked, ultimately leading to improved health outcomes for mothers and infants [20].

Physiotherapists contribute significantly to patient management by focusing on physical rehabilitation and mobility. In a multidisciplinary setting, physiotherapists work alongside nurses and doctors to design rehabilitation programs tailored to the individual needs of the patient. This collaboration is particularly pertinent in post-operative care, where early mobilization can prevent complications such as pneumonia and thromboembolism [20].

Physiotherapists also adopt a proactive approach by conducting assessments on patients' physical capabilities and establishing strategies to improve their functional status. This assessment process is essential for developing holistic care plans that consider not only the medical but also the physical and psychological dimensions of a patient's health [21].

In critical care and emergency services, the implications of a multidisciplinary approach cannot be overstated. The nature of critical illnesses requires rapid decision-making and coordinated interventions from diverse healthcare professionals. Critical care teams, which may include intensivists, nurses, respiratory therapists, and pharmacists, often operate in high-pressure environments where effective communication and collaboration are paramount [21].

Emergency services serve as the first point of contact for patients experiencing acute medical events. Emergency medical technicians (EMTs) and paramedics are trained to manage critical situations on-site and during transport to healthcare facilities. Their actions can set the stage for successful outcomes, emphasizing the need for seamless collaboration with emergency department

physicians, nurses, and other specialists upon patient arrival [22].

Anesthesiologists are indispensable members of the multidisciplinary team, particularly in surgical settings. Their expertise in pain management and sedation is crucial for ensuring that patients remain stable and comfortable during procedures. Furthermore, anesthesiologists work with surgeons, emergency department personnel, and critical care teams to assess patient risks, manage anesthesia during surgery, and provide post-operative care to alleviate pain and monitor recovery [22].

By collaborating closely with other healthcare professionals, anesthesiologists contribute to a more integrated approach to patient management, enhancing overall safety and efficacy and ultimately leading to better surgical outcomes [22].

Physical Therapy's Role in Rehabilitation and Recovery:

Physical therapy (PT) is a vital component of the healthcare continuum that focuses on diagnosing, treating, and preventing physical disabilities and impairments. As a critical part of rehabilitation and recovery processes, physical therapy employs a multifaceted approach designed to enhance the functional abilities and overall quality of life for individuals who experience limitations due to injury, illness, or disability [23].

Physical therapy encompasses a variety of techniques including therapeutic exercises, manual therapy, modalities such as heat and cold treatment, and patient education. PT professionals, known as physical therapists (PTs), are trained to evaluate the patient's condition, design individualized treatment plans, and implement interventions that facilitate the healing process. PTs possess specialized knowledge not only in anatomy and physiology, but also in biomechanics, kinesiology, and neurology, which equips them to address complex conditions affecting mobility and function [23].

The Rehabilitation Process

Rehabilitation is a holistic process that aims to help individuals restore their capabilities and reintegrate them into society following an injury, surgery, or illness. Physical therapy plays a critical role at multiple stages in this process. Initially, the focus may be on pain management and inflammation reduction, while later stages involve restoring

movement, enhancing strength, and improving functional abilities [24].

1. **Initial Assessment and Diagnosis:** The rehabilitation journey often begins with an assessment, where the PT evaluates the patient's physical condition, history, and specific functional limitations. This diagnostic phase is crucial as it establishes the foundation for the tailored treatment plan.

2. **Creating a Personalized Treatment Plan:** Utilizing the assessment data, the PT designs a personalized rehabilitative program that addresses the individual's unique goals. These goals may range from basic movements, such as sitting up or walking, to more complex tasks, such as returning to work or engaging in recreational activities.

3. **Implementation of Therapeutic Interventions:** The core of physical therapy lies in therapeutic interventions tailored to the patient's specific needs. These may include stretching and strengthening exercises, cardiovascular conditioning, balance training, and functional exercises aimed at mimicking real-life activities. Additionally, modalities like ultrasound therapy, electrical stimulation, and therapeutic massage can enhance recovery by improving circulation and alleviating pain [25].

Importance of Evidence-Based Practice

The field of physical therapy is increasingly oriented toward evidence-based practice, which means that treatment protocols are built on the best available current research combined with clinician expertise and patient preferences. This approach is essential for several reasons:

1. **Consistency in Care:** Evidence-based practice provides a structured framework that guides therapists in delivering treatment based on proven efficacy. This reduces variability in care and enhances the overall quality of physical therapy services.

2. **Improved Patient Outcomes:** Studies have demonstrated that patients receiving evidence-based interventions tend to achieve better functional outcomes and higher satisfaction levels. This fosters a culture of continuous improvement, as PTs remain informed about the latest research findings and clinical advances.

3. **Cost-Effectiveness:** Incorporating evidence-based protocols can lead to more efficient treatment modalities that may reduce the length of rehabilitation, thus lowering healthcare costs. Health systems benefit from reduced patient loads and quicker recovery, while patients experience full recovery sooner [26].

Diverse Patient Populations

Physical therapy serves a wide array of patient populations, each with unique needs and recovery trajectories. Some key groups include:

1. **Post-Surgical Patients:** For individuals recovering from surgeries such as orthopedic procedures, cardiovascular interventions, or reconstructive surgeries, PT plays a crucial role in managing postoperative pain, improving mobility, and facilitating a return to pre-surgery levels of function [27].

2. **Individuals with Chronic Conditions:** Patients with chronic ailments, such as arthritis, diabetes, and cardiovascular diseases, benefit from physical therapy through exercise regimens designed to enhance physical stamina and promote joint health. PT encourages active participation in health management, reducing the need for medication and associated side effects [27].

3. **Geriatric Population:** As individuals age, they are at an increased risk for falls and injuries. Geriatric physical therapy focuses on enhancing balance, strength, and coordination, ultimately decreasing fall risk and improving independence.

4. **Sports Rehabilitation:** Athletes, both amateur and professional, often turn to physical therapy for injury prevention and rehabilitation. PT not only aids recovery but also works on conditioning and strengthening programs to optimize performance and minimize downtime [27].

Psychological and Emotional Aspects of Recovery

Finally, physical therapy contributes significantly to the psychological and emotional well-being of patients during their recovery journey. Individuals recovering from physical impairments may experience feelings of frustration, loss of identity, or anxiety about their future mobility. PT sessions can serve as a form of rehabilitation that fosters encouragement, motivation, and support. Building a

therapeutic alliance between the patient and therapist is crucial, as personal motivation significantly influences recovery outcomes [28].

Critical Care: Enhancing Outcomes through Team-Based Strategies:

Critical care medicine occupies a unique and essential position within the healthcare system, dealing predominantly with patients whose conditions are life-threatening, requiring intensive monitoring and interventions. As the complexities of medical technology increase and population health challenges evolve, the demand for coordinated, efficient, and effective care has never been more critical [29].

Critical care involves the management of severe and often complex medical conditions, which may include respiratory failure, trauma, septic shock, and multiple organ dysfunction. Patients in these scenarios require multidisciplinary approaches that weave together diverse expert insights from various healthcare professionals, including critical care physicians, nurses, pharmacists, respiratory therapists, and social workers. Given that patients in critical settings often belong to vulnerable populations with multifaceted and interconnected health issues, a team-based approach is paramount [29].

The Importance of Team-Based Strategies

Team-based strategies in critical care emphasize collaboration and communication among healthcare providers. The effectiveness of these strategies lies in fostering an environment where diverse expertise converges to inform best practices and treatment decisions. A collaborative atmosphere not only improves the flow of information among team members but also enhances the ability to assess patient needs comprehensively. Different healthcare professionals contribute valuable skills and distinct perspectives that can lead to more reliable diagnoses and effective treatment plans [30].

1. Enhanced Communication

Effective communication is critical in ensuring positive patient outcomes in critical care environments. Through structured communication models, such as SBAR (Situation, Background, Assessment, Recommendation), teams can streamline the sharing of essential patient information, clarify roles, and ensure that everyone

is on the same page regarding the care plan. A well-defined communication process reduces the risk of errors which can arise in high-stakes environments where time is often of the essence [31].

2. Situational Awareness

Team-based strategies enhance situational awareness, allowing team members to remain vigilant and responsive to changes in patient conditions. Regular briefs and debriefs during shifts help ensure that staff members are not only informed about the present state of a patient but also engaged in anticipating potential issues. This collective vigilance is vital; for example, recognizing subtle changes in vital signs can lead to rapid interventions that save lives [31].

3. Improved Decision-Making

In critical care environments, decision-making can be a daunting task, often fraught with uncertainty and risk. Collaborative teams can leverage their diversified expertise to deliberate on treatment options more comprehensively. When multidisciplinary teams engage in case discussions, they are more likely to consider various perspectives, leading to well-rounded and informed decisions. Furthermore, evidence-based medicine thrives in such settings, as teams can draw upon collective research knowledge and clinical experience to optimize care plans [31].

4. Crisis Management

In crises typical of critical care situations, such as cardiac arrest or severe sepsis, coordinated efforts become imperative. Team-based strategies facilitate established protocols and roles during emergencies, streamlining the response effort. For instance, during cardiopulmonary resuscitation (CPR), designated roles such as compressions, airway management, and medication administration are clearly defined, enhancing efficiency and maximizing the likelihood of patient survival [32].

5. Psychosocial Support

Critical illnesses do not only affect the patients; they also profoundly impact their families. Team-based approaches recognize the importance of providing psychosocial support to family members, who often experience high levels of stress and anxiety. Social workers, chaplains, and nurses play critical roles in facilitating family discussions, addressing their

fears, and providing emotional support. Multidisciplinary care teams can incorporate family-centered interventions, improving the overall experience while promoting ethical and compassionate care [32].

Challenges to Implementation

Despite the evident advantages of team-based strategies in critical care, several barriers can impede their successful implementation. Issues such as hierarchical structures within healthcare environments, time constraints, varying levels of professional training, and resistant communication styles may hinder the fluidity of teamwork. Acknowledging these challenges is the first step toward cultivating a culture that values collaboration.

To foster team-based strategies effectively, healthcare institutions should prioritize education and training. Simulation exercises, for instance, are invaluable tools that can immerse team members in high-pressure scenarios, emphasizing the importance of collaboration and communication. Additionally, investing in leadership development can empower healthcare professionals to foster a culture of teamwork, emphasizing mutual respect and shared responsibility [33].

Emergency Services Integration: Timely Responses and Care Coordination:

In an increasingly complex world, the ability of emergency services to respond swiftly and effectively to crises is paramount. The integration of various emergency services—such as medical, fire, and law enforcement—plays a crucial role in ensuring timely responses and effective care coordination during emergencies [34].

The Importance of Integrated Emergency Services

Emergency services are often the first line of defense in critical situations, ranging from natural disasters to medical emergencies. The integration of these services is essential for several reasons:

1. **Enhanced Communication:** Effective communication among different emergency service providers is vital for timely interventions. Integrated systems allow for real-time sharing of information, ensuring that all responders are aware of the

situation and can coordinate their actions accordingly [35].

2. **Resource Optimization:** When emergency services operate in silos, resources can be misallocated or duplicated. Integration allows for better resource management, ensuring that personnel, equipment, and supplies are deployed where they are most needed, thereby reducing response times and improving overall efficiency [35].

3. **Comprehensive Care:** Integrated emergency services facilitate a holistic approach to patient care. For instance, when a medical emergency occurs, the seamless collaboration between paramedics, emergency room staff, and other healthcare professionals can significantly enhance patient outcomes. This is particularly important in cases where time-sensitive interventions are critical, such as in cardiac arrest or severe trauma.

4. **Community Preparedness:** Integrated emergency services foster stronger relationships among various agencies, which can lead to improved community preparedness. Joint training exercises and coordinated disaster response plans can enhance the readiness of all involved parties, ultimately benefiting the community during actual emergencies [35].

Challenges to Integration

Despite the clear benefits of integrated emergency services, several challenges hinder effective coordination:

1. **Communication Barriers:** Different agencies often use disparate communication systems that are not compatible with one another. This fragmentation can lead to delays in information sharing, miscommunication, and ultimately, ineffective responses [36].

2. **Jurisdictional Issues:** Emergency services are frequently governed by different jurisdictions, each with its own policies, procedures, and priorities. This can create conflicts and confusion during multi-agency responses, particularly in large-scale emergencies that require collaboration across jurisdictions.

3. **Resource Limitations:** Budget constraints and resource limitations can impede the ability of

emergency services to invest in integrated systems and training. This can lead to gaps in coordination and preparedness, particularly in underserved communities [36].

4. **Cultural Differences:** Each emergency service agency has its own culture, values, and operational philosophies. These differences can pose challenges in establishing a unified approach to emergency response, as personnel may be hesitant to adapt to new protocols or collaborate effectively [36].

Strategies for Enhancing Integration

To overcome these challenges, several innovative strategies are being employed to enhance the integration of emergency services:

1. **Unified Communication Systems:** The development of unified communication platforms allows for real-time information sharing among different agencies. These systems can facilitate seamless communication during emergencies, ensuring that all responders have access to the same information and can coordinate their actions effectively [37].

2. **Cross-Training Programs:** Implementing cross-training programs for personnel from different emergency services can foster a better understanding of each agency's roles and responsibilities. This can enhance collaboration and improve overall response effectiveness, as responders will be more familiar with the protocols and capabilities of their counterparts [37].

3. **Joint Emergency Response Plans:** Developing joint emergency response plans that involve all relevant agencies can streamline coordination during crises. These plans should outline clear protocols for communication, resource allocation, and decision-making, ensuring that all parties are prepared to act in concert during emergencies [38].

4. **Community Engagement:** Engaging the community in emergency preparedness initiatives can enhance the overall effectiveness of integrated services. Public education campaigns, community drills, and partnerships with local organizations can empower residents to take an active role in emergency preparedness and response, ultimately supporting the efforts of emergency services [38].

5. **Technology Integration:** Leveraging technology, such as Geographic Information Systems (GIS) and predictive analytics, can enhance situational awareness and resource allocation during emergencies. These tools can provide responders with real-time data on incidents, enabling them to make informed decisions and allocate resources effectively [38].

Case Studies of Successful Integration

Several regions and agencies have successfully implemented integrated emergency services, serving as models for others to follow:

1. **The City of San Diego:** San Diego has developed a robust integrated emergency management system that includes fire, police, and emergency medical services. The city utilizes a unified communication platform that allows for real-time information sharing among all agencies. This integration has resulted in faster response times and improved patient outcomes during medical emergencies [39].

2. **The United Kingdom's National Health Service (NHS):** The NHS has implemented a coordinated approach to emergency care that involves collaboration between ambulance services, hospitals, and primary care providers. This integration has led to the development of urgent care centers that provide timely treatment for non-life-threatening conditions, reducing the burden on emergency departments [39].

3. **The Netherlands' Integrated Emergency Services Model:** In the Netherlands, emergency services have adopted an integrated model that emphasizes collaboration between fire, police, and medical services. This model includes joint training exercises and the use of a centralized dispatch system, resulting in improved coordination and faster response times during emergencies [39].

Anesthesia and Pain Management in Comprehensive Care:

The field of medicine is multifaceted, and among its diverse aspects lies deep research into anesthesia and pain management. These components are critical to comprehensive patient care and serve fundamental roles not only in surgical settings but also in the management of chronic pain conditions and various medical procedures [40].

Understanding Anesthesia

Anesthesia is a medical practice characterized by the use of pharmacological agents to produce a temporary loss of sensation or awareness, allowing for surgeries and medical procedures to be conducted with minimal discomfort to the patient. Anesthesia may be classified into several categories, including general, regional, and local anesthesia [41].

1. **General Anesthesia:** This type induces a reversible loss of consciousness in patients, usually employing a combination of intravenous medications and inhalational agents. It is typically used for major surgeries, requiring comprehensive monitoring and support of various bodily functions during the procedure [42].

2. **Regional Anesthesia:** This method involves injecting anesthetic agents near specific nerves or nerve plexuses, effectively blocking sensation in a larger body area. Epidurals and nerve blocks are common regional techniques that offer pain relief during surgical interventions, as well as for labor and delivery.

3. **Local Anesthesia:** This method affects a limited area of the body, usually for minor surgical procedures, dental work, or diagnostic interventions. Local anesthetics inhibit nerve transmission in the specific area where they are administered, allowing patients to remain conscious while eliminating pain sensation [42].

The safe administration of anesthesia not only requires precise knowledge of human anatomy and pharmacology but also exemplary skills in monitoring and managing potential complications. Anesthesiologists and nurse anesthetists are responsible for ensuring that patients remain safe and comfortable, playing a vital role in surgical teams [43].

The Importance of Pain Management

Pain management is a broader discipline focused on addressing and alleviating pain associated with a wide variety of conditions, ranging from post-operative discomfort to chronic pain syndromes such as arthritis or neuropathy. Effective pain management involves a multidisciplinary approach, incorporating medical, psychological, and physical therapies to enhance the patient's quality of life [43].

Pharmacological Approaches

Pharmacological interventions typically form the backbone of pain management strategies. These include:

1. **Non-Opioid Analgesics:** Medications such as acetaminophen and nonsteroidal anti-inflammatory drugs (NSAIDs) are often first-line treatments for mild to moderate pain. They operate by inhibiting enzymes involved in pain perception, providing relief with a lower risk of dependence compared to opioids [44].

2. **Opioid Analgesics:** The introduction of opioids (e.g., morphine, oxycodone) for moderate to severe pain management has revolutionized pain treatment. However, their risk for addiction and potential side effects necessitate cautious use and strictly monitored patient management, especially in cases of chronic pain conditions.

3. **Adjuvant Medications:** These agents, originally developed for other conditions, can provide relief for specific types of pain. For instance, anticonvulsants and antidepressants are often used in neuropathic pain management, demonstrating that a tailored approach may amplify treatment outcomes [44].

Non-Pharmacological Approaches

Comprehensive pain management should extend beyond pharmacological interventions to encompass non-pharmacological therapies that address psychosocial factors contributing to pain perception. These may include:

1. **Cognitive Behavioral Therapy (CBT):** Psychotherapeutic techniques such as CBT aim to reshape the patient's understanding of pain and develop coping strategies, facilitating emotional well-being alongside physical comfort [45].

2. **Physical Therapies:** Engagement in physical activities tailored by physiotherapists can improve mobility and overall physical fitness while reducing pain through techniques like supervised exercise regimens, manual therapies, and modalities such as heat or cold applications.

3. **Complementary and Alternative Medicine:** Approaches like acupuncture, massage therapy, and relaxation techniques have gained popularity, often providing additional symptomatic

relief and improving the overall sense of control that patients experience regarding their conditions [45].

Integrating Anesthesia and Pain Management in Patient Care

The integration of anesthesia and multidisciplinary pain management strategies within comprehensive patient care yields numerous benefits. Key among these are enhanced surgical outcomes, improved patient satisfaction, and a significant reduction in post-operative complications and psychological distress.

1. **Enhanced Surgical Outcomes:** Properly managed anesthesia facilitates smoother surgical procedures, reducing physiological stress responses and possibly resulting in quicker recoveries. Alongside effective pain management pre- and post-surgery, patients report improved levels of comfort and a lower perception of pain [46].
2. **Improved Patient Satisfaction:** Studies consistently indicate that effective pain management correlates with increased patient satisfaction. Ensuring patients are well-informed regarding their pain management strategies, from pre-operative counseling to post-operative follow-ups, reinforces their sense of care and involvement in their treatment plans.
3. **Reduction in Complications:** Adequate pain control has been linked to decreased incidences of chronic pain development post-surgery, as well as lower rates of psychological issues such as anxiety and depression. Proactive anesthesia management and integrated pain management approaches help prevent these adversities [46].

Challenges and Future Directions

Despite the significant advancements in anesthesia and pain management, several challenges continue to persist. The opioid crisis of the 21st century underscores the need for more stringent approaches in prescribing and monitoring usage. Additionally, disparities in access to pain management resources, especially among vulnerable populations, further narrow the scope of effective patient care [47].

Future directions call for a holistic approach incorporating predictive analytics, personalized medicine, and a focus on mitigating the risks associated with opioid use while promoting contemporary strategies. Research into alternative

modalities and the utilization of technology in pain management—as seen with telehealth options—will also serve to expand accessibility and improve outcomes for countless patients [47].

Future Directions: Challenges and Opportunities in Integrated Patient Management:

In the evolving landscape of healthcare, the future of integrated patient management stands at a critical juncture. As healthcare systems increasingly transition towards value-based models, the need for cohesive and comprehensive patient management strategies becomes more pronounced. Integrated patient management—a holistic approach that combines continuous care, coordination among multiple healthcare providers, and efficient use of resources—promises improved health outcomes, enhanced patient satisfaction, and reduced costs. However, this model also presents a host of challenges that must be navigated with foresight and innovation [48].

Integrated patient management is predicated on the notion that patient care should not be fragmented but rather delivered uniformly across different healthcare settings. This includes the coordination between primary care, specialty care, and social services, ensuring that patient experiences are seamless and centered around individual needs. The approach is designed to address the complexities of chronic disease management, improve efficiency, and leverage data-driven decision-making [49].

The current health ecosystem is marked by significant advancements in technology, demographic shifts, and rising expectations from patients. One of the most pivotal trends influencing integrated patient management is the proliferation of digital health technologies, including telehealth, electronic health records (EHRs), and mobile health applications. These tools facilitate better communication between patients and providers, enhance access to care, and allow for real-time monitoring of health status [50].

Additionally, there is a growing emphasis on personalized medicine and shared decision-making, which view patients as active participants in their own care. This shift not only fosters greater patient satisfaction but also encourages adherence to treatment plans, resulting in better health outcomes [51].

Opportunities in Integrated Patient Management

1. **Enhanced Care Coordination:** The integration of services allows for improved coordination between different healthcare providers, reducing redundancies and ensuring that all aspects of a patient's health are addressed. For example, care coordinators can manage patient transitions between hospital, home, and rehabilitation facilities, mitigating the risks of readmissions and ensuring continuity of care [52].

2. **Data Utilization and Analytics:** The abundance of health data generated through EHRs and wearable technology presents a significant opportunity for personalized patient management. Advanced data analytics can identify trends in patient behavior, track outcomes, and inform treatment protocols tailored to individual needs. Predictive analytics can also be employed to foresee potential health crises, enabling proactive interventions [53].

3. **Patient Engagement and Empowerment:** Technologies that promote patient self-management—such as mobile apps for tracking symptoms or managing medications—enable individuals to take a proactive role in their own care. Moreover, integrating educational resources suited to individual health literacy levels encourages informed decision-making and fosters a sense of ownership over health [53].

4. **Interdisciplinary Collaboration:** Integrated patient management fosters collaboration among healthcare professionals from diverse disciplines, driving innovation in treatment approaches. By working in interdisciplinary teams, providers can create comprehensive care plans that reflect the multifaceted nature of health conditions, especially for patients with chronic illnesses requiring varied expertise [53].

5. **Cost Reduction:** By prioritizing prevention and early intervention through integrated management, healthcare systems can reduce over-reliance on emergency services, streamline operations, and ultimately lower healthcare expenditures. This shift towards proactive care can significantly alleviate the economic burdens currently faced by healthcare systems worldwide [54].

Challenges to Overcome

Despite the vast opportunities presented by integrated patient management, several challenges must be addressed to realize its full potential:

1. **Silos in Healthcare Delivery:** A significant barrier to effective integrated patient management is the existence of silos—distinct divisions within healthcare that impede communication and collaboration. Overcoming these silos requires systemic reforms, including standardizing protocols and fostering a culture of teamwork among healthcare providers [55].

2. **Data Privacy and Security Concerns:** As the collection and sharing of patient data becomes more ubiquitous, ensuring privacy and compliance with regulations such as HIPAA remains a pressing challenge. Healthcare organizations must invest in robust cybersecurity measures while ensuring that patient data remains accessible to authorized providers [55].

3. **Resource Allocation and Funding:** Transitioning to a model of integrated care often necessitates significant upfront investments in technology, staff training, and care coordination efforts. Healthcare systems, particularly in resource-constrained environments, may struggle to prioritize funding for these initiatives. Establishing financial incentives that align with value-based care models is necessary to facilitate this transition [56].

4. **Resistance to Change:** The traditional structure of healthcare often fosters resistance to new models of care. Stakeholders—including healthcare providers, institutions, and patients—may be hesitant to adopt integrated approaches due to uncertainty or apprehension about new practices. Effective change management strategies, including training and communication, are vital in overcoming such resistance [57].

5. **Measurement and Evaluation:** Assessing the effectiveness of integrated patient management approaches is critical for continuous improvement. However, establishing appropriate metrics that accurately reflect patient outcomes, satisfaction, and efficiency can be complex. Developing standardized benchmarking tools is essential to facilitate meaningful evaluations and comparisons across different institutions [57].

Conclusion:

In conclusion, the integration of family medicine, nursing, midwifery, physical therapy, critical care, emergency services, and anesthesia is crucial for achieving comprehensive patient management. This multidisciplinary approach not only enhances the quality of care but also ensures a holistic understanding of patient needs throughout their healthcare journey. By fostering effective communication and collaboration among diverse healthcare professionals, patient-centered care becomes more accessible and efficient, leading to improved health outcomes and increased patient satisfaction.

Moving forward, it is essential to address the challenges associated with integrating these disciplines, such as potential barriers to communication and differing professional cultures. Developing standardized protocols, enhancing interdisciplinary training, and leveraging technology can facilitate collaboration and streamline care processes. As healthcare systems continue to evolve, embracing an integrated model will enable providers to better respond to complex patient needs, ultimately transforming the landscape of patient care and promoting a healthier society.

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