# Moving Beyond the Status Quo of Integrated Inpatient Medical and Psychiatric Care Units: The Path to Real-World Evaluation

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Integrated inpatient medical and psychiatric care units (IMPUs) are hospital wards that care for inpatients with both acute general medical and psychiatric disorders. IMPU development has stalled, and wide variation in IMPU designs may reflect the fact that IMPUs are still in an early evolutionary stage. High-quality evidence concerning the costs and effectiveness of IMPUs is sparse, because IMPUs do not lend themselves well to traditional evidence-based medicine methods. As a result, most studies of IMPUs have been only observational. Therefore, it is time for a different approach, in which goals for IMPUs are explicitly formulated and IMPU research is incorporated into evidence-based practice (EBP) instead of evidence-based medicine. EBP can be viewed as integrating best available evidence into organizational practices by using four pillars of evidence: organizational, experiential, stakeholder, and scientific. Such types of evidence require an investment in describing the field more precisely. When pragmatic reasoning, where clinical expertise and organizational needs determine IMPU designs, is replaced with EBP, researchers can more effectively perform studies that may convince health care policy makers that IMPUs represent a cost-effective way to improve patients' health and that they increase the well-being of both patients and hospital staff.

*Psychiatric Services 2022; 73:555–560; doi: 10.1176/appi.ps.202000811*

Integrated inpatient medical and psychiatric care units (IMPUs) are hospital wards that serve acute patients with both general medical and psychiatric disorders (1). Patients with these co-occurring disorders do not always receive appropriate care, resulting in poor clinical and functional outcomes as well as higher cost of care (2). IMPUs were established in the 1980s to specifically address the needs of such patients. In the 1990s, Harsch et al. (3) argued that a heterogeneity in IMPU design suggests an early stage of evolution. However, these design differences remain. High-quality evidence concerning costs and clinical effectiveness of the various IMPUs is sparse because the research field faces several challenges to studying IMPUs. First, IMPUs do not lend themselves well to traditional evidence-based medicine methods. Second, as mentioned, IMPU designs vary widely, and randomized controlled trials (RCTs) would therefore require extensive design standardization to yield generalizable results. Moreover, IMPUs are never stand-alone wards but are part of clinical pathways that affect success or failure of IMPU designs and interventions.

As a result, most studies of IMPUs have been observational, and 40 years after the first IMPU was established, little can be said about patient and economic outcomes of IMPU care (1, 4). It is therefore time for a different approach. First, we explain why explicit goals for IMPUs should be formulated and suggest how the field may do so. We sketch out limitations of the evidence-based medicine research paradigm for studying IMPUs and why research

**HIGHLIGHTS**

- Integrated inpatient medical and psychiatric care units (IMPUs) are hospital wards that provide treatment of patients with both general medical and psychiatric disorders.
- Although IMPUs have been in existence for >40 years, high-quality evidence regarding their costs and effectiveness is scarce.
- To arrive at high-quality evidence on the effectiveness of IMPUs, the long-used evidence-based medicine approach should be broadened to evidence-based practice (EBP).
- EBP uses organizational, experiential, stakeholder, and scientific evidence to iteratively adjust goals, objectives, and organizational features of IMPUs, depending on observed outcomes.

on IMPUs should be incorporated into the broader perspective of evidence-based practices (EBPs). We follow an iterative process, integrating evidence from four sources: organizations, experiential reports, stakeholder perspectives, and scientific studies (including observational research) (5). We conclude that EBP methods, instead of evidence-based medicine methods, are needed to gather evidence regarding the costs and effectiveness of IMPUs and to improve clinical practice in the IMPU setting. We propose that with this evidence-based approach we can improve IMPUs and can take this unique specialty to the next stage.

## IMPU DESIGNS AND GOALS

### Current IMPU Designs

Kathol and colleagues (6) proposed a much-used description of IMPU designs that are based on the level of acuity of the patients an IMPU serves. Acuity refers to patient care capabilities and not goals and describes capabilities on the basis of two dimensions: psychiatric and general medical patient care (7). However, acuity is inconsistently defined and measured in the literature (8, 9). What corresponds most to Kathol et al.'s (6) term is "acuity capabilities" of a clinical setting, which relates acuity to demands on providers, including nursing care needs and nurse workload or care complexity, as well as the general medical and psychiatric care needs of patients. Most IMPUs described in the literature to date have medium psychiatric and medical acuity capabilities. As suggested by several authors (1, 2), IMPUs will likely deliver the most value if they focus on providing care to patients with complex conditions whose management requires high-level medical and psychiatric acuity capabilities. We suggest, however, that the value of an individual IMPU depends on its goals and contextual needs (2). Serving a complex patient population can be a goal, as can relieving staff strain or improving patient and economic outcomes. Thus, besides the categorization of Kathol et al. (6) in terms of acuity capabilities, we introduce a broader description based on specific IMPU goals and contextual needs.

### IMPU Descriptions Based on Goals

IMPUs vary widely in goals (defined below) and designs, depending on their context, population served, and financing (1). As early as 1991, Harsch et al. (3) concluded, "Variations between patient populations, milieu, and organization suggest that MPUs [medical and psychiatric care units] are still in an early stage of evolution." Moreover, in a recent, structured interview study of 40 MPUs in the Netherlands, we also found a diversity of IMPU designs, suggesting that they have not yet matured (10). An IMPU's goals influence its design, among which are needed acuity capabilities. For instance, if the focus of a planned IMPU is to relieve other hospital departments of patients posing behavioral challenges, the medical acuity capabilities of an IMPU do not necessarily have to be high. We suggest that the focus of IMPUs most likely will include more than just patient-related outcomes and that clarifying goals, objectives, and unit designs may be sufficient to enable conclusions about what relevant outcomes to consider in the design. A consideration of relationships among goals, objectives, outcomes, and unit design is also in line with work by Donabedian (11), who proposed explicitly linking goals, objectives, and intended results of medical care departments to adapt design elements. But as a rule, goals have not been specified, and design elements, including acuity capabilities, have not been systematically studied (2). This research gap hampers connecting goals to design elements (7).

*Definition of goals, objectives, and outcomes.* Goals of IMPUs differ widely and are related to IMPU design. Services on an IMPU seek to achieve certain outcomes, so clarity about the IMPU's goals and objectives is key. To this end, we use the term "goal" to describe a declaration of intent or aspiration. The more clearly the goals of an IMPU are defined (the "what"), the more specific the objectives (the "how") will be (12). For example, if the goal of the IMPU is to facilitate medical care, "control patient behavior as little as possible by way of restraints" may be an objective, and "the duration and number of restraints used on patients" may be a defined outcome. If the goal is increasing staff satisfaction, then "relieve nursing wards of patients with challenging behaviors" may be an objective, and the outcomes might be a "a 5% increase in staff satisfaction and a 3% decrease in absenteeism." If an IMPU also sets long-term outcome goals, such as the recovery of functioning or social participation of patients, a combination of objectives is probably needed to achieve these outcomes.

*Description of goals in previous research.* Like IMPU design elements, the goals of IMPUs are not systematically described in the literature. Most previous studies were observational and have focused on outcomes such as length of stay (LOS) and—to a lesser extent—patient functioning, without elaboration whether these outcomes are relevant to the goals of a specific IMPU. This lack of a description hampers the linking of goals and specific design elements to outcomes. Considering the variation of IMPU designs, we conclude that the external validity of previous studies is limited.

Despite Harsch et al.'s (3) observation that IMPUs still are in an early evolutionary stage, a recent development has taken place in the research paradigm regarding IMPUs. Chan et al. (13) conceptualized IMPUs as an organizational intervention and found IMPUs to be effective, although we note that the literature on this topic is inconclusive (1). Chan et al. (13), commenting on their recent assessment of five IMPUs in the United States, remarked, "Exact implementation is less important than customizing the model (of the IMPU) to fit the culture, logistics, and resources of each institution." The authors also noted that certain key features are probably responsible for the success that the

five IMPU-housing institutions have found, resulting in the "decreased use of constant supervision and restraints, reduced [LOS], and increased staff and patient satisfaction." We note that Chan et al. (13) defined outcomes but not goals. The IMPU designs these authors described also varied widely. As mentioned above, in such cases it is important to define IMPU goals and objectives. In this way, intended goals and outcomes of IMPUs can be linked to specific key features or design elements in the context of the culture, logistics, and resources of each institution, resulting in outcomes such as decreased use of patient supervision and restraints, reduced LOS, and increased staff and patient satisfaction.

**Primary IMPU Goals**

No consensus exists on the primary goals of IMPUs, because such goals are context dependent, and, as mentioned, IMPUs do not prioritize goals equally. A recent review of IMPUs (1) identified the top five goals of IMPUs as integration and continuity of care, assurance of quality and safety, improved patient-related and health-economic outcomes, professional training, and management of disruptive behavior or high health care utilization. IMPU goals are congruent with the tradition of consultation-liaison psychiatry and the "quadruple aim" of IMPUs in value-based health care, in which the focus is not only on improving population health and reducing costs but also on enhancing the experiences of patients and of health care professionals and providers (14, 15).

*Explicitly formulating IMPU goals.* According to IMPU type, goals of IMPUs can be estimated according to patient or referring staff needs and intervention duration. Some IMPUs focus on short-term crisis intervention, psychotherapeutic and milieu treatment, or temporary admission when patients show disruptive behavior. In contrast, some IMPUs are longer-stay wards. The latter units emphasize functional recovery and resocialization (1). These variable IMPU types imply different underlying goals, acuity capabilities, and outcomes. More concretely, if the goal is to improve long-term patient health, psychiatric and medical acuity capabilities do not necessarily have to be high, and extended stays will be acceptable. Accordingly, it cannot be assumed that IMPUs with high-acuity capabilities are better than those with low-acuity capabilities.

*Operationalization of IMPU goals.* The operationalization of goals into objectives reveals how they are intertwined and sometimes compete (7). For instance, if the goals of an IMPU are to manage disruptive behavior, reduce cost, and improve the quality of care, an objective of reducing LOS may have the effect of improving disruptive behavior management and reducing costs. However, this specific objective may not be compatible with integration and continuity of care and improving long-term outcomes. One might also define avoiding "push-outs" (i.e., discharging patients from the IMPU as soon as possible) as an objective for an IMPU, in which case LOS reduction would be a wrong outcome measure of success. Moreover, if staff satisfaction is the primary goal of an IMPU, an IMPU may be considered a success when referring staff is content with admission capabilities while available bed capacity and care are provided on an IMPU.

## METHODOLOGICAL CONSIDERATIONS

**Limitations of Evidence-Based Medicine Designs**

Given the current lack of a model that relates goals and objectives to outcomes, it may be tempting to pursue an RCT, for example, to establish the clinical effectiveness and cost-effectiveness of IMPUs. With an RCT, it is not necessary to have a model that interlinks goals, objectives, and outcomes, because as long as the targeted outcome of an RCT is defined, the RCT will provide information on the variables that have been experimentally controlled. Thus, a well-executed RCT showing significant effects on long-term patient outcomes, such as survival or quality of life, would provide strong evidence for the success of the IMPU interventions or design choices tested in the trial. However, randomized designs run into several problems when deployed in IMPU studies, as detailed below.

The patients an IMPU serves represent a very heterogeneous group, and the IMPU intervention consists of a range of components that are not always stable over time, such as IMPU context and design, nurse training, physician team composition, and multidisciplinary collaboration. Moreover, it is difficult to randomize the routing of patients through a medical institution. In the case of IMPUs, randomization would involve three staff types: the physician or nurse who makes the call for psychiatric help, the IMPU staff, and the psychiatric consultation-liaison service, which in most cases would be the control condition. Patients and physicians are likely to have strong preferences for either the intervention or care-as-usual arm, probably influencing the randomization. In addition, when a patient is in a mental or behavioral crisis, researchers cannot directly obtain informed consent for study participation from the patient.

Although the problems with randomization could be addressed in theory, they will significantly bear on the design and outcomes of an IMPU study, and they may also interact. Furthermore, sampling bias may occur. For instance, three different staff members will have to consent to supporting a trial. At best, a subgroup of consenting patients could be randomly assigned to interventions of the trial. It is likely that some patients with more serious behavioral problems will not agree to study participation. Clinicians will probably want to include patients who do not have severe behavioral health problems and need to believe firmly that only empirical evidence based on an RCT justifies treatment allocation. Physicians have little incentive to have patients with disruptive behaviors randomly assigned to care as usual, because such patients can put

strain on regular wards. It is likely that physicians would include less serious cases in the trial and would request direct access to the IMPU for patients with the most complex conditions.

It also will be challenging to convince caregivers that treatment in a department specifically equipped for the needs of those in their care may be withheld from them. Such an RCT would have a satisfactory internal validity, but it would not represent real-life patients and hospital staff. Moreover, the difference in the effect of the IMPU and care as usual will likely be limited, because it is less likely for patients in both conditions, owing to the abovementioned mechanism of sampling bias, to show disruptive behavior. Because disease complexity among these patients will be limited, this limitation will not allow IMPUs to use their full range of capabilities in treating patients with complex conditions and may not enable researchers conducting the trial to find a meaningful difference between intervention groups.

### Necessary Conditions

In search of evidence for effectiveness of an IMPU, looking for circumstantial evidence may be helpful. Such an approach is in contrast to approaches that seek to identify a sufficient condition for evidence, such as RCTs that measure survival or quality of life. If an IMPU has convincing clinical and other effects compared with treatment as usual, the IMPU would represent a "sufficient condition for effectiveness." For example, Kishi and Kathol (16) suggested that a high-acuity IMPU is the most cost-effective IMPU type. Instead of conducting an RCT that compares the entire IMPU with care as usual, researchers may investigate whether the IMPU at a hospital meets the design described above and how the specific design element, that is, primarily serving patients with high acuity, is linked to costs. Researchers could then explore other necessary conditions, such as the link between joint patient rounds and satisfaction among patients, caregivers, and referring physicians. This approach does not investigate whether an entire IMPU is effective but whether design elements of an IMPU are associated with increased effectiveness.

Instead of verifying effectiveness of IMPUs as an integral unit, researchers may look only at specific conditions for the desired outcomes of an IMPU, without investigating whether these outcomes are interconnected. For example, staff satisfaction may be necessary for improving patient-related outcomes. Likewise, the key features or design elements introduced by Chan et al. (13) might also be conditions that lead to several interconnected outcomes. The authors argue that IMPUs cannot function without buy-in from all levels of hospital staff; adequate communication between internists and psychiatrists; clinical support of social workers and physical, occupational, speech, and recreational therapists; and a robust triage system (13). Each of these design elements could be investigated with respect to specific goals, such as decreased use of constant patient supervision and restraints, reduced LOS, and increased staff and patient satisfaction, to determine whether these elements are linked to specific outcomes.

Such proposed research lacks a parallel control group, and researchers can usually use only a pre-post design to evaluate a new treatment. However, if the goals, objectives, and other elements are formulated precisely, the need for a control condition is diminished. For instance, if IMPUs are open to nightly admissions and nightly use of patient restraints on the medical wards is reduced, IMPU care has helped reduce the need for restraining patients. This would be a solid, yet indirect, indicator for the effectiveness of the IMPU.

## WHAT WILL BE NEEDED?

### Evidence-Based Practice

How should clinicians proceed with the development of and scientific evidence for effectiveness of IMPUs? We argue that research into IMPUs should extend beyond patient outcomes. IMPUs are organizational interventions that have broad goals (such as staff satisfaction) beyond only patient-related goals and outcomes and may not always lend themselves to RCTs. Therefore, we argue for an EBP research paradigm that consists of an approach based on four pillars: organizational data about goals and objectives and outcomes; experiential evidence and tacit knowledge among health care providers, patients, and managers about goals, objectives, and outcomes; evidence from stakeholders (physicians, patients, and managers) about the goals, objectives, and value of IMPUs; and scientific evidence (including observational studies). With such an approach, the IMPU is examined and improved in an iterative process that involves evidence from the four pillars and adjustment of goals, objectives, and organizational features depending on the observed outcomes.

To find out which essential design elements and contexts are associated with what outcome for a specific IMPU, researchers may use the CIMO (Context, Intervention type I, invoked Mechanism, and achieved Outcome) method. For example, in the context of an academic hospital with sufficient resources and buy-in from all levels of hospital staff, addition of a physician assistant as an intervention provider may result in the mechanism of continuity of behavioral treatment, which reduces the number of agitated patients, leading to the outcome of fewer restraints (17). In this way, IMPUs can be described not only on the basis of integral unit characteristics, such as acuity capabilities, but also according to specific, context-dependent design elements that can be used to achieve specific goals and outcomes.

### Approaches in Other Specialties

The aforementioned variability among IMPUs is not unique to them and reflects a state of development in a medical specialty. The status of IMPU designs worldwide resembles the lack of standardization of emergency departments (EDs) in the United States in the 1960s. The ED medical staff

typically consisted of alternating physicians from various specialties, including psychiatry and even pathology, and staff training ranged from training on the job to full training in ED care. In some cases, the ambulance service was arranged by funeral directors because only they had vehicles that could transport people in s supine position (18). Such heterogeneous and improvised care would be unthinkable today. There is a consensus about EDs' goals and the relationships among goals, structure, and outcomes, as reflected in quality standards.

In evidence-based medicine, patient-related outcomes are the main focus of clinical investigations (19). However, patient-related outcomes such as quality of life and even long-term survival might not be primarily relevant for EDs, because these outcomes are determined mainly through follow-up treatment at other hospital wards. An ED may be considered successful despite having an unfavorable long-term survival of its patients if it excels in increasing short-term survival. So, in EBP, consensus among different parties and stakeholders is needed in regard to the goals and objectives of the EDs and the necessary design elements for targeted outcomes (11).

We used the example of EDs to highlight some commonalities with the evolution of IMPUs, and we can look to other medical disciplines that also used a pragmatic approach and formulated clear goals and objectives. An inspiring example is that of multisystemic therapy (MST) in youth care. The concept of MST is to involve the extended family, health professionals, teachers, neighbors, and police to help change a child's behavior. The approach gives much freedom to the therapist, and treatment success is determined through three outcomes: the youth is living at home, is attending school, and has not been arrested (20). These outcomes differ from more commonly used patient-reported outcomes assessed with questionnaires to measure disturbed thoughts and behavior, social dysfunction, and other forms of psychopathology. The MST outcomes take into account the child's goals and society's perspective on appropriate behavior. The MST approach and evaluation of treatment success serve as a model for evaluating IMPUs: outcomes should be measurable; meaningful for the patient, caregivers, and society; and in line with the treatment goals.

## CONCLUSIONS

There has been a lack of progression in the development of IMPUs. The current variation in IMPU designs may reflect the fact that IMPUs are still in an early evolutionary stage. IMPU goals and designs are variable because the regional contexts, needs, and facilities for an IMPU differ per hospital, but this variation hampers a proper linking of design elements to stated goals, objectives, and intended outcomes. Rather than using outcome measurement to evaluate an integral unit like an IMPU, we can define which conditions (or design elements) for IMPUs must be present to achieve specific goals (such as whether the right patients are being treated, whether the staff is fully trained, and whether staff satisfaction is achieved). In this way, researchers can avoid some hurdles associated with traditional evidence-based medicine. Confounding can never be fully accounted for in the IMPU paradigm, but sophisticated methods and a wide range of experience exist for dealing with such confounding. A common assumption is that without an RCT, evidence-based medicine is impossible, which in our opinion is a naive view. Evidence-based medicine strives for the use of the highest possible level of evidence. In Sackett's words: "Evidence based medicine is not restricted to randomised trials and meta-analyses. It involves tracking down the best external evidence with which to answer our clinical questions" (21).

To advance the evidence base, we need to examine IMPUs to identify which design elements are used to achieve specific goals and intended outcomes in a particular context and continually adjust these design elements in an iterative process. For instance, if consensus is reached that the goal of an IMPU is "relieving staff strain on medical wards," design elements must be arranged to facilitate behavioral management of patients. This objective is achieved when patients show improved behavioral health and can return to the general ward. Because the goal is not primarily to improve long-term patient functioning, this outcome would not be the ultimate success parameter of the IMPU (11). Given the pragmatic existence of IMPUs, reaching consensus about their goals needs discussion among clinicians in the field. In such discussions, pragmatism is not fully abandoned, as exemplified by MST, which has pragmatically defined ultimate outcomes after considering its goals. The next step for IMPUs should be to relinquish the belief that "pragmatic" means that an IMPU can be organized in a largely arbitrary way and replace this belief with the notion that measurable outcomes can be pragmatically linked to IMPU goals. Thus, we can adopt a multistakeholder perspective, establish when these stakeholders consider IMPUs a success, formulate goals, and then measure whether these goals were met. For IMPUs, we could define short-term ultimate outcomes such as facilitating medical care, reduced constant supervision and restraint, and staff satisfaction. Longer-term outcomes are functional recovery and social participation. In this process, we should not shy away from inevitable trade-offs.

This new approach fits the idea of EBP, which can be viewed as integrating best available evidence into organizational practices by using four pillars of evidence: organizational, experiential, stakeholder, and scientific (5). This effort will lead to an improved scope of practice and operation of IMPUs and more advanced and better equipped IMPUs. Such direction requires an investment in describing IMPUs more precisely. When pragmatic reasoning is replaced with EBP, we can more effectively perform studies that convince health care policy makers and payors that IMPUs indeed represent a cost-effective way to improve patients' health,

with the additional benefit of increasing the well-being of both patients and hospital staff.

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The authors report no financial relationships with commercial interests.

Received November 8, 2020; revision received June 29, 2021; accepted July 16, 2021; published online October 27, 2021.

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