

B- 1st Review – Part B

Pathways linking Post-Acute Rehabilitation health-related outcomes with its specific interpersonal dimension of care

B1) Review Introduction

The healthcare field faces the challenge of improving quality on its six-dimensions (effectiveness, safety, efficiency, timeliness, equity and patient-centeredness) ⁽¹⁾. The interpersonal dimension of care, referring to the practitioners' management of the relationship, communications, and interactions with patients/families, can give a multi-dimensional contribute towards this quality-improvement effort. Indeed, besides recognized as the core element of patient/family-centeredness ^(2; 3), the interpersonal dimension of care has been increasingly linked to more effective health-related outcomes ^(4; 5; 6; 7).

In rehabilitation, this topic is scarcely addressed, with few exceptions. For instance, the perceived quality of physician-patient interactions was associated to less patients' pain and anxiety both at discharge and follow-up periods ⁽⁸⁾. Furthermore, a recent systematic review found positive associations among the strength of the therapeutic alliances and the subjective rehabilitation outcomes, however, the number of studies reviewed was low and, among them, just few (3 out of 13) referred to comprehensive PAC Rehabilitation programs, specifically to brain-injury PAC Rehabilitation ⁽⁹⁾. Additionally, in this latter context, selected brain-injury outcomes were improved by an interdisciplinary team-training study for developing therapeutic alliances ⁽¹⁰⁾. Finally, a specialty training-study, within a physiatrists' residency program, improved the physicians' performance on rehabilitation-specific communication items. However, the potential impact of these improvements on health-related outcomes was unmeasured ⁽¹¹⁾.

This preliminary data suggests that further, systematically-developed, studies shall be developed to more solid test whether, how much, and in what circumstances, PAC Rehabilitation health-related outcomes can be influenced by the interpersonal dimension of

care, or its improvement. However, the systematic development of these studies shall be supported on conceptual mechanisms that explain how, or by what mediating pathways, this contribution could happen. This kind conceptual pathways already exist as applied to general healthcare^(12; 13), or specifically to cancer care⁽¹⁴⁾. However, to our knowledge, no equivalent paper exists tailored to the unique scope of PAC Rehabilitation care.

B2) Review Objectives

According to the exposed scenario, the objectives of this specific review are the following:

- 1) Hypothesize conceptual pathways (describing the mediating variables and underlying mechanisms) by which PAC Rehabilitation health-related outcomes could be seminally influenced by its interpersonal dimension of care.
- 2) According with, and responsive to the previously hypothesized pathways, we additionally aim to preliminary develop a set of essential elements or key aspects for the PAC Rehabilitation interpersonal dimension of care.

B3) Synthesis of the Methods

This 1st review part - B is built over, and triggered by, the quality conceptual framework provided by the 1st review. Synthetically, among other things, the previous paper framed the levels of PAC Rehabilitation outcomes, and introduced the interpersonal dimension of care as a quality-element of the PAC Rehabilitation process. Herein, we conceptually hypothesize how PAC Rehabilitation health-related outcomes can be seminally influenced by key aspects of the interpersonal dimension, specifying the mediating psychosocial and behavioral variables (there broadly labeled as *psychosocial & behavioral outcomes*) and mechanisms in between.

Likewise the preceding framework, this review is built over a supportive conceptual review underpinned by the integrated principles of the scoping^(15; 16), realist⁽¹⁷⁾ and integrative⁽¹⁸⁾ review approaches. Moreover, this review used exploratory searches in electronic-databases as well, in case putting and mixing rehabilitation, interpersonal/communication, and psychosocial related keywords which led to a comprehensive ‘snowballing’ process over the issue⁽¹⁹⁾. Information continuously abstracted was conceptually-mapped and displayed into evolving and progressively refined drafts of the paper. Finally, considering the great amount, complexity, and fragmentation of the related literature, we have performed a parsimonious framework reduction (e.g. keeping the most updated, representative, theoretically grounded, empirically solid, and systematically reviewed information/references), along with an integrative conceptual synthesis we made over the preliminarily displayed information^(17; 18; 20).

B4- Review Results

In the figure 4, which overviews our results, we represent two major mediating mechanisms or conceptual pathways (illustrated by dark and bright arrows) by which two different subsets of health-related-outcomes are hypothesized to be seminally influenced by key aspects of the interpersonal dimension. Accomplishing our first aim, we below depict both these conceptual pathways. Later, accomplishing our second aim, we depict the key aspects of the PAC Rehabilitation interpersonal dimension of care preliminarily defined according to its potential ability to underpin the hypothesized conceptual pathways.

1- Hypothesized Conceptual Pathways

We begin to hypothesize that different types of health-related outcomes might be influenced by the interpersonal dimension of care through different mediating mechanisms or variables, according to the characteristics of these outcomes and their determinants.

In a first conceptual pathway (outlined by dark arrows in [figure 4](#)), we hypothesize that the health-related outcomes more directly accounting for the technical process, labeled as *technical outcomes*, are influenced by the effective implementation of the rehabilitation *technical process*, which accounts for the patient's *therapeutic engagement*, whose *psychosocial determinants* can be re-constructed by the *interpersonal dimension* of care, in a dynamic and continuous interaction with other care-variables and the patients/families' personal, disease/disability, social or other environmental variables. These latter are the *contextual factors* in relation to the care-process.

In a second conceptual pathway (bright in [figure 4](#)), a set of more complex, subjective, and long-term outcomes-dimensions, labeled as *adjustment outcomes*, are hypothesized to be directly accountable for the patients/families' *patterns of response towards disability*, whose *psychosocial determinants* might be seminally influenced by the *interpersonal dimension* of care in dynamic interaction with other care-variables and *contextual factors* as well. Each of these conceptual pathways is below specified.

1.1 First Conceptual Pathway ('dark' pathway)

The hypothesized conceptual pathways were constructed, and will therefore be described, in an outcomes-based or backwards fashion. It means that we first define and characterize the outcomes or pathways endpoints, then the intermediate variables/outcomes and their determinants (immediate outcomes), followed by a brief outline about how the *interpersonal dimension* of care can influence or underpin the pathways' mediating outcomes (broadly labeled and introduced as *psychosocial & behavioral outcomes* in the 1st review). Finally, the key-elements for an optimized *interpersonal dimension* of care, underpinning all the hypothesized pathways, will be specified and blended together in a last and independent sub-section.

1.1.1 Pathway endpoints: Characterizing the technical outcomes

The pathway endpoints (labeled as *technical outcomes*) comprises outcomes mostly accounting for biological, objective, or tangible determinants which more directly respond to an effective *technical process implementation*.



Among the broader set of PAC Rehabilitation outcomes depicted in the 1st review, these *technical outcomes* can embrace the following ones (fig.4): the *biomedical outcomes*, such as the clinical prevention/management of medical conditions or secondary disabilities; the *body structures & functions* outcomes such as the ones resulting from the effective implementation of rehabilitation therapies; the *functional capacity* outcomes integrating clusters of improvement in the body structures and body function towards a better function into a neutral environment; the *physical/tangible environmental outcomes* such as architectural barriers removed or assistive devices added towards enhancing levels of functional performance; and finally the *activity* outcomes, specifically referring to an enhanced functional performance into autonomy or daily-living tasks. All these outcomes mostly account for an optimized *technical process* implementation. However, besides the *technical* variables, this *technical process* implementation additionally accounts for an optimized patient's *therapeutic engagement* below depicted.

1.1.2 Patient's therapeutic engagement

A patient's *therapeutic engagement* refers to an active and optimized patient's participation into rehabilitation and therapeutic activities, as supported by an internalized commitment, motivation, and volition towards the achievement of meaningful rehabilitation outcomes^(21; 22). Indeed, measures of active care-participation⁽²³⁾ and the more comprehensive rehabilitation engagement^(22; 24) both showed predictive validity towards *activity* outcomes. Moreover, a study using one of these measures found that 'frequently-poor' active care-participation leads to 25% less improvement in motor-outcomes (*activity*) compared to 'occasional-poor' and 'good' participation levels; whereas the two latter differed 3 days of length-of-stay among each other towards achieving the same level of motor-outcomes. This data shows that both effectiveness and efficiency margins exist for interventions that improve the *therapeutic engagement* and its determinants⁽²⁵⁾.

A *therapeutic engagement* might hold both biological and psychosocial determinants. Indeed, first of all a *therapeutic engagement* accounts for a patients' biological readiness, alertness, as well as physical and cognitive capacity and endurance (possibly enabled by technical interventions⁽²⁶⁾) towards actively-participating into rehabilitation activities. However an optimized *therapeutic engagement* over and beyond accounts for the level *motivation* and volition the patient psychosocially develops^(22; 27). The psychosocial processes by which patients develop and sustain *motivation/intention* and

volition/behaviors towards an optimized *therapeutic engagement* are precisely the ones we hypothesize as suitable to be seminally influenced, or re-shaped, by the *interpersonal dimension* of care, as below depicted into the two following sub-sections.

We shall additionally denote that towards the development of these sub-sections, we were conceptually grounded on the Health Action Process Approach (HAPA) ⁽²⁷⁾, which is the behavioral model we found applied to a *therapeutic engagement* conceptualization ⁽²¹⁾.

Motivational Process

The patient's *motivation* for a *therapeutic engagement* represents a variable widely acknowledged by rehabilitation practitioners as a key determinant of optimized rehabilitation activities and their outcomes. However, both the professionals' accounts and the rehabilitation literature sustain substantial variance, applied common sense, and over-simplified constructions about the meanings, implications, and determinants of such a *motivation*. It is inclusively found some implicit, improper, moralizing judgments about the personality/character of patients labeled as 'unmotivated' (e.g., when *motivation* is tied to *personal* traits). *Motivation* shall be rather conceptually seen as a goal-oriented, multi-determined, and dynamic intention to behave, which accounts not only for the variables of the patient (personal and disease/disability factors) and its environment, but for the constant and dynamic interaction among these patient-related variables and care-variables such as the *interpersonal dimension* of care ^(28; 29; 30).

Once *motivation* is goal-oriented, it first means that rehabilitation goals need to become conducive to, and aligned with, patient's life-goals ^(21; 28; 31). For instance, this alignment might be promoted by a shared goal-setting/planning: a key-aspect of the *interpersonal dimension* of care later depicted. Furthermore, an optimized *interpersonal dimension* of care might be able to assess, *foster*, or re-frame, the following sequence of motivational *cognitions* which - in a dynamic interaction with an *emotional processing* of disability ^(32; 33; 34) - might contribute to the development and sustainment of a *motivation* for a *therapeutic engagement* ⁽²¹⁾.

Motivational Cognitions

Towards building *motivation* for a *therapeutic engagement*, patients first need to hold, or otherwise develop, a 'perceived need' for rehabilitation. This 'perceived need', arguably, is

not developed if patients remain unaware of the acquired-deficits. This lack of self-awareness of deficits can result from a neurological “impaired self-awareness”⁽³⁵⁾, from escaping/avoidant coping responses (or defense/denial) triggered by a struggling *emotional processing* of disability, or still result from a mix of both^(36; 37). Despite possibly co-occurring, these two etiological mechanisms have differential behavioral manifestations and implications for professionals to handle, respectively benefiting from directive/structured feedback, or from a non-confrontational and supportive interactional style^(36; 37; 38).

Second, patients need to hold and develop positive, yet realistic, ‘outcomes expectancies’ for their own *therapeutic engagement*⁽²¹⁾. It means that they need to perceive that applied efforts into rehabilitation activities or exercises will result in better outcomes, which is underpinned by a certain degree of perceived control over the process and the outcomes which are perceived as not exclusively accounting for the ‘chance’ or the ‘powerful others’ such as the rehabilitation treatments or professionals. By contrast, patients shall not perceive excessive/unrealistic control over the rehabilitation-process and outcomes, which can be detrimental towards a long-term *motivation* (and the further *adjustment outcomes*) by means of increased frustration and disappointment^(39; 40).

Finally, building and sustaining *motivation* for a *therapeutic engagement* additionally requires an enhanced, but still accurate, level of ‘motivational self-efficacy’, specifically referring to how much patients perceive themselves capable of carrying out the upcoming rehabilitation challenges/activities. This ‘motivational self-efficacy’ shall account for an enhanced ‘self-awareness’ of strengths beyond the previous ‘self-awareness’ of deficits⁽²¹⁾.

Volitional process

Beyond patients’ *motivation*, there is also a need for volitional/action variables towards a *therapeutic engagement* becoming operational into behaviors. This volitional process might be able to close the frequent gap that appears between *motivation* (underlying intentions) and concrete *therapeutic engagement* behaviors^(21; 41).

According to the HAPA model⁽²⁷⁾, which deeply addresses this issue, the volition and concrete *therapeutic engagement* behaviors can be promoted through an ‘action plan’ that prospectively specifies what, as well as when and how, specific rehabilitation tasks might be actively performed by patients. This ‘action plan’ might benefit from a complementary

‘coping plan’, which proactively designs strategies to overcome anticipated barriers towards the maintenance/recovery of a *therapeutic engagement*, particularly after discharge (42; 43).

Besides proactively promoted, a *therapeutic engagement* might be continuously enhanced by a ‘volitional self-efficacy’, referring to the perceived ability to perform, maintain, or even regain a *therapeutic engagement* when it is lost, suitable, or about to be lost; as well as promoted by a self-regulated ‘action-control’ process, which might continuously monitor, appraise, compare and, if needed, re-adjust the current engagement behaviors towards the prospectively planned and desired levels (27). This self-regulated ‘action control’ process might be facilitated by the continuous feedback provided by rehabilitation practitioners. Despite applicable to all patients (44), this continuous feedback might be particularly structured, and helpful, for patients with impairments on the so called executive functions which help to plan, organize, activate, self-regulate, actively cope with difficulties, and maintain a sequence of tasks and behaviors for wider accomplishments (45; 46).

1.1.3 Cognitions directly shaping the activity outcomes

As aforementioned, the *technical outcomes* account for a patient’s *therapeutic engagement*, whose *psychosocial determinants* are the ones suitable to be enhanced by the aspects of the *interpersonal dimension* of care. However, there are some specific *psychosocial determinants* such as *cognitions* of perceived control, self-efficacy or confidence directly predicting some specific levels of *activity outcomes* such as the balance and walking behaviors (47; 48; 49; 50). Therefore, if able to *foster* and activate these specific *cognitions*, the *interpersonal dimension* of care could, directly (fig. 4), underpin the enhancement these *activity outcomes*.

1.2 Second Conceptual Pathway (Bright Pathway)

In this second pathway we describe how another sub-group of more complex PAC Rehabilitation health-related outcomes, labeled as *adjustment outcomes*, can be seminally shaped by the *interpersonal dimension* of care (fig4).

1.2.1 Pathway endpoint: Characterizing the adjustment outcomes

The label *adjustment outcomes* refer to a set of more complex, distal, multi-determined, and multi-dimensional outcomes of PAC Rehabilitation. These *adjustment outcomes* are built over the previous *technical outcomes* and their determinants, but also account for a set of psychosocial, behavioral, and subjective variables determining how well or how adaptively each individual - at their own individual set of circumstances - faces, manages, integrates, and ideally overcomes the advent and perceived consequences of disability. These sets of patients/families' responses refer to the different *patterns of response towards disability* we frame as the mediating variable for this second pathway.

This mediating variable will later be depicted after the characterization of each of the outcomes-constructs we framed under the broader label of *adjustment outcomes*, which is the endpoint of this pathway ([fig.4](#)).

Patients' *participation* refers to the engagement with fulfilling social role ⁽⁵¹⁾. Unlike *activity*, a functional performance outcome as well, patient's *participation* outcomes were rather framed as an *adjustment outcome* due to representing a long-term, multi-dimensional, and multi-determined outcome which - beyond the underlying biological and objective capacity to perform - strongly accounts for subjective and psychosocial variables towards determining whether an active re-engagement with social roles occurs. Moreover, a comprehensive *participation* embraces the meaning, subjective experience, and satisfaction with social roles performed and engaged with (a *participation* satisfaction dimension); as well as a subjective dimension of *participation* 'enfranchisement', referring to how much people feel choice/control over *participation*, and how much they perceive themselves as valuable, and valued, elements of their community/society ⁽⁵²⁾. All these dimensions of *participation* strongly account for subjective and psychosocial variables. Finally, even an objective dimension of *participation* outcomes ⁽⁵³⁾, or whether a person's actually or concretely re-engages with social roles, accounts for the will/motivation, attitudes, volition, and resources (both personal and social ones) the person is able to mobilize, activate, or direct, towards that achievement ^(54; 55; 56).

The *patient-specific HRQoL* refers to an 'umbrella' outcomes-construct of both objective and subjective well-being, under the person's perspective. Regarding the most objective determinants, the construct embraces the lower levels of sleep disturbance, chronic pain/discomfort or fatigue. Despite these symptoms often hold a primary biological

etiology, these can additionally account for, or being moderated by, subjective and psychosocial variables and interventions^(57; 58; 59). Furthermore, *patient-specific HRQoL* can include more subjective and psychosocial outcomes-variables or determinants such as: positive mood, positive affect, life satisfaction, subjective well-being, and mental health (e.g., beyond the absence of mental-illness⁽⁶⁰⁾), which might be dimensions directly accounting for the adaptive or maladaptive nature of the *patterns of response towards disability* further depicted.

Finally, *family/caregivers' HRQoL* refers to the prevention or reduction of the potential impacts of patient's disability in the well-being and social participation of the family/caregivers. This systemic impact is not exclusively determined by the severity or objective systemic consequences of patient's disability but also mediated, or at least moderated, by the relatives/caregivers' own *patterns of response* towards the systemic impacts of the situation.

1.2.2 Patients' adaptive or maladaptive patterns of response towards disability

When a disabling event occurs, a set of coping responses need to manage the overwhelming distress and natural negative emotional reactions (e.g., shock, anger, hostility, sadness) triggered by the advent of disability and its perceived consequences. Hopefully, but not always, these coping responses might contribute towards a cognitive and *emotional processing* and integration of disability^(32; 33; 34; 61). These become adaptive particularly when followed, or accompanied by, self-determined attitudes and behaviors towards re-exerting objective or subjective mastery and control over one's life, which might be activated, empowered and enabled, by the attitudes and actions of rehabilitation providers (e.g., by the further key aspects of the *interpersonal dimension* of care)⁽⁵⁶⁾. The set of these responses are combined, and can be represented, into different *patterns of responses towards disability*, adaptive or maladaptive according to the individual circumstances or situations, as it follows.

A first *pattern of response towards disability* which can be depicted is a tenacious restore pursuit. Indeed, a person can effectively cope with and manage the appraised distress of disability, and further re-gain objective control over own-life, by tenaciously directing energy, efforts, and attention towards the restore or re-accomplishment of previous life-goals, either through a tenacious *therapeutic engagement* for capacity recovery (a partial overlap among the conceptual pathways); or through the development of problem-solving,

environmental change, or disability compensation strategies^(62; 63; 64). To be adaptive, or promoter of the *adjustment outcomes*, this tenacious restore pursuit pattern might be directed towards circumstances, life goals or life standards objectively controllable or potentially re-acquirable - at least in some way or to a certain degree – by the person/family undergoing rehabilitation. By contrast, to rigidly and continuously follow such a *pattern*, but directed towards uncontrollable situations or non-accomplishable life goals can rather be maladaptive due the unfit of the response to the situation⁽⁶⁵⁾.

Towards overcoming residual disability, another *pattern of response* will be required as well. Indeed, it is needed some degree of active emotion-focused coping responses (e.g., supported emotional release, understating efforts, positive re-framing)^(60; 66; 67; 68) and/or some degree of a flexible goals/standards re-adjustment^(62; 63; 65), respectively towards promoting an *emotional* and cognitive *processing* of disability. By following a response-shift rationale, we posit that people can cognitively accommodate, or adapt to, disability's objective and subjective losses/changes by re-elaborating - meaning re-prioritizing, re-calibrating, or re-conceptualizing - the personal life goals or internal standards of accomplishment to match the situation and objective degree of accomplishment^(69; 70; 71). Moreover, following a positive psychology rationale, people can actively cultivate and build on hope, resilience, fair optimism, positive affect, curiosity, existentialism, or even on the activation of *personal* values, strengths, or resources towards finding meaning, benefit, life purpose, growth, alternative life patterns, and thereby a renewed level of subjective well-being and life satisfaction - all aspects conducting towards more positive *adjustment outcomes* without necessarily changing objective outcomes determinants^(60; 72; 73; 74).

Rather than mutually exclusive, these *patterns* (tenacious restore pursuit and flexible goals/standards readjustment) might ideally coexist and complement each other. While the first works towards restoring objective degree of control and performance, the second re-adjusts sense of experience, subjective degree of accomplishment, and further promotes re-engagement with meaningful alternatives^(62; 63; 65). The right balance among these *patterns* can vary according to different people, circumstances, life goals, and also according to the own time-frame of rehabilitation. For instance a flexible goals/standards readjustment might gain added emphasis when tenacious restore pursuit are about to reach their 'plateau' level of objective results^(63; 75).

By contrast, rigid *patterns of response* characterized by disengagement or continuous use of passive-based emotion coping strategies (e.g., escape, avoidance, hopelessness, helplessness, projected hostility/anger, wishful thinking, blame, social reliance, or substance abuse) seem to be maladaptive towards the long-term *adjustment outcomes* ^(57; 66; 67; 68; 76; 77; 78). Also maladaptive can be continuous negative emotions and affect (including depression ⁽⁷⁹⁾); and a set of negative *cognitions* such as low perceived control, sense of coherence, self worth, and self efficacy ⁽⁸⁰⁾, or even the high presence of post-traumatic *cognitions* or magnified appraisals of threats, losses, or symptoms (e.g., catastrophizing ⁽⁵⁷⁾). These variables, particularly combined and mutually-reinforcing, consistently seem to undermine the long-term *adjustment outcomes* of the patients ⁽⁶⁰⁾.

1.2.3 Family/caregivers own patterns of response towards patient's disability and its perceived consequences

The changes into the family dynamics, the own emotional impact, or the performance of a demanding caregiver role can contribute to reduce the *family/caregivers' HRQoL* ^(81; 82), including a reduced social functioning ⁽⁸³⁾. This impact can be mediated, or moderated, by the family/caregivers' own *patterns of response* towards facing, managing, and overcoming the systemic consequences of patients' disability ^(84; 85), as increasingly addressed by rehabilitation interventions ^(86; 87).

Additionally, the family/caregivers' own *patterns of response* can be reflected into the patients' outcomes, presumably through an enhanced *relatives support* (emotional, informational, or instrumental support) provided to patients ^(88; 89). The optimization of these family/caregivers' *patterns of responses towards disability* and their determinants (e.g., through the *interpersonal dimension* of care) can, therefore, presumably underpin the *adjustment outcomes* of both the patients and their family/caregivers.

2) Key Aspects for the *Interpersonal Dimension* of Care

Accomplishing our second aim, and aligned with current frameworks of practitioners-patient/family communication ^(13; 14; 90), as well as responsive to the previously hypothesized pathways, we below propose the following set of four key aspects for the

PAC Rehabilitation *interpersonal dimension* of care (fig.4). These are presented as sequential, because they do follow a logical implementation order. Yet, they are better seen as a whole unit for the interpersonal dimension of care, with interdependent, concurrent, synergic, recurrent, and reversible steps or tasks.

2.1 Building a Supportive Relationship

A practitioners-patients/family *relationship* based on respect, trust, rapport, empathy, and mutual commitment (partnership/alliance) sets the optimal context or atmosphere for both emotionally *supportive* interactions and an optimized rehabilitative journey to occur. Indeed, it is in the context of an accepting, safe, and collaborative *relationship* - complemented by active-listening and sensorial attentiveness to emotional cues ⁽⁹¹⁾ - that practitioners can optimally elicit, and then emphatically *support*, an *emotional processing* of the disabling experience so critical for the whole rehabilitative process ⁽⁹²⁾. Conversely, performing emotionally *supportive* interactions might strengthen the professional-patient alliance or *relationship* ⁽¹⁴⁾ which can achieve its tipping point around mid-therapy if actively fostered ⁽⁹³⁾, even with patients cognitive damage which could challenge interactions ⁽⁹⁴⁾. That actively strengthened *relationship* further creates the ideal scenario for eliciting and addressing more complex/sensitive communication aspects such a sexual or intimacy issues: a matter of major underlying concern often dismissed or even unraveled ⁽⁹⁵⁾.

A *supportive relationship* can be primarily built over the Rogers' person-centered attributes of acceptance/respect, genuineness, and empathy ⁽⁹⁶⁾, further complemented by a 'narrative' approach. Indeed, by eliciting and actively listening to the narratives or stories of the people (beyond the disability story), practitioners are fostering a *supportive relationship* and making patients/families feel known, listened, and valued as persons. Moreover, through narrative-based interactions, practitioners can gain a valuable knowledge/awareness of the person beyond the patient in which to base further individualized interactions and decision-making ⁽⁹¹⁾. Finally, the own process of (re-)telling and (re-)constructing personal stories/narratives, in the context of a *supportive relationship*, can iteratively and interactively work towards patients/families making sense of their own continuum life events, integrating disability-experience into a whole lived experience, rebuilding sense of coherence; and fostering an identity-congruent reconstruction of the life to come ^(97; 98).

2.2 Effective Information Exchange

Information exchange refers to effectively gathering and effectively providing information⁽¹³⁾. Indeed, first practitioners need to elicit (e.g., through open-ended enquiry) and active-listen to patient/families' clinical and experiential information. This effective information gathering, complemented by reflective reasoning, underpins individualized 'technical' care decisions. Therefore, it might represent another way - in case a more direct way - by which the *interpersonal dimension* can enhance the *technical process* implementation and the subsequent health-related outcomes⁽¹⁴⁾ (fig.4). But practitioners also need to effectively convey, or educate, for important information patients/families need to accurately assimilate⁽⁹⁹⁾. This requires that professionals do check the patient/family's understanding, for instance asking them to re-frame, apply, or exemplify the message they understood⁽⁹⁰⁾. Furthermore, an *effective information exchange* is necessarily tailored/individualized to the patient's emotional, communication, and cognitive status or damages^(100; 101), as well as adapted to *personal factors* such as health-literacy/numeracy skills⁽¹⁰²⁾, cultural⁽¹⁰³⁾, or even interactional styles and interactional preferences⁽¹⁰⁴⁾.

Finally, both the development of *therapeutic engagement* and adaptive *patterns of response towards disability* require more than just assimilated information, knowledge, or skills. It means that only *effective information exchange*, even underpinned by a *supportive relationship*, embeds no elements enough for an optimized *interpersonal dimension* of care. The two following key aspects are needed as well.

2.3 Developing a shared goal-setting & action-planning

A *shared goal-setting* refers to a process bringing together practitioners and patients/families towards defining both relevant and feasible rehabilitation or broader rehabilitative goals. By optimally involving patients/families into a *shared goal-setting*, practitioners are calling for, and enabling that, an intrinsic *motivation* and self-determination could arise towards an optimized *therapeutic engagement* and empowered rehabilitative journey. A *shared goal-setting* might benefit from an iterative correspondence into a *shared action-planning*, which continuously concretize how, and when, goals might

be actively accomplished by patients/families⁽⁴⁴⁾. This latter *shared action-planning* drives volition and sets the standard for a self-regulation of a *therapeutic engagement* and broader long-term and self-management rehabilitative behaviors.

Achieving shared goals and action-plans involves a collaborative, interactional, and partnership process⁽¹⁰⁵⁾ which, however, is not the standard practice in rehabilitation, with an ultimate tendency for practitioners-led, expert-based, definitions⁽¹⁰⁶⁾.

The process of developing a truly *shared goal-setting & action-planning* might start with a ‘shared knowledge’ fostered by the previous key aspects of this *interpersonal dimension* of care, might advance through a more or less extended ‘shared deliberation’ about possibilities or alternatives (including exploration of subjective and psychosocial history and factors underpinning preferences or goal-intentions), and hopefully it ends with a ‘shared mind’, referring to a consensual mindset for goals and rehabilitation, emerging from practitioners-patient-family’s shared perspectives and attuned interactions⁽¹⁰⁵⁾. Only then, such a truly ‘shared mind’ might be operationalized into specific, concrete, and time-framed rehabilitation-goals and action-plans which shall be both effective and meaningful⁽¹⁰⁷⁾.

Instead of linear or closed, this collaborative process might be rather iterative into rehabilitation practice⁽⁴⁴⁾, with an initial ‘shared mind’ open to be specified or readjusted in time according to: evolving rehabilitation stages and responsiveness to early interventions, a more accurate prognosis, or even according to evolving changes in the needs, mindsets or preferences of patients/families. The underlying uncertainty in the process and outcomes prediction, often leading to distress and anxiety, might be meanwhile empathically elicited and actively reassured by practitioners⁽¹⁴⁾. For instance, rehabilitation providers tend to avoid to communicate, or do not communicate at all, about topics of uncertain rehabilitative prognosis, which can inadvertently maintain or silently reinforce misleading expectations leading to further disappointment⁽³⁹⁾. An emphatic surface over the underlying unpredictable prognostic factors could be more reassuring, particularly if further complemented - not meaning substituted - by the enlightenment of the aspects or factors the patients/families can actively exert objective or subjective control on^(108; 109).

Finally, once rehabilitation goals might be congruent and conducive towards the achievement of high-order personal goals^(31; 38), and some of the previous life-goals/standards cannot be – objectively - totally restorable, the previously mentioned step

of ‘shared deliberation’, in the middle of the shared decision-making process, could need to include not only a *reframing* of misinformed or faulty *cognitions* or internalized misconceptions, but also a fundamental *reframing* of personal life goals or standards, as aspects addressed by the last element.

2.4 Fostering a positive, realistic, and meaningful cognitive & self reframing

A set of *cognitions*, outlined throughout the review, underpins both hypothesized pathways. If practitioners are able to monitor and, if needed, actively *foster* or help to *reframe* these *cognitions* towards a more *positive, meaningful, yet realistic* level, they are facilitating the achievement of the outcomes-variables accounting for these *cognitions*.

A *re-framing* of misleading or unproductive *cognitions* can be promoted by employing the basics of the cognitive-behavioral principles or techniques ⁽⁶⁵⁾. However, once these *cognitions* are build over an internalized lived experience, *personal factors*, and further co-constructed in constant interplay with an *emotional processing* of disability ⁽³²⁾, a successful *cognitive reframing* needs to be grounded into a non-confrontational style and mostly in an atmosphere of an emotionally *supportive relationship* which have worked to foster the knowledge of the person beyond the patient, the transmission of a genuine emphatic concern, and the acknowledgement of the patients/families’ self-determination. These are pre-conditions for patients/families to develop a ‘readiness’ to first contemplate and only then truly engage with any *meaningful cognitive reframing* or behavioral change process. This is for instance the major rationale of the ‘Motivational Interviewing’ (MI), a change-based framework successfully applied to a growing number of healthcare contexts ^(30; 110). The MI rationale is also thought to be suitable to rehabilitation application towards enhancing the needed intrinsic *motivation* for a *therapeutic engagement* and rehabilitative journey, as well as towards preventing or overcoming any possible rehabilitation disengagement ^(22; 38).

For instance, a recent randomized controlled trial found that rehabilitation practitioners using MI principles, after brief-training, achieved immediate ⁽¹¹¹⁾ and long-term *positive* mood outcomes ⁽¹¹²⁾. However, in the study the rehabilitation practitioners employed these principles into scheduled MI-sessions, not embedded into regular interactions, as this *interpersonal dimension* of care primarily refers to. Furthermore, to assure MI principles

were accurately employed, a ‘technical’ background support from psychologists was used in the study, and this might be a valid statement for this key-aspect on its whole. If delivered by rehabilitation-team’s psychologists, this ‘technical’ background support might contribute towards the operationalization of a team-based approach for the PAC Rehabilitation *interpersonal dimension* of care.

Finally, when patients/families face residual disability, constrains, or non-restorable goals or standards, the rehabilitation practitioners might need to *foster* a *cognitive* accommodation of residual disability, accompanied by a *meaningful reframing* of individual’s life goals, priorities, and internal standards of accomplishment (response shift rationale), as well as it might be fostered a *positive* development of personal strengths, values, resources, or vitality towards making the life worth-living beyond deficits or residual disability (positive psychology rationale). Through these ways, practitioners might be contributing towards enabling a patients/families’ self-determined and *meaningful* reconstruction of the life to come after and despite disability.



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