

Learning Through Longitudinal Patient Care—Narratives From the Harvard Medical School–Cambridge Integrated Clerkship

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Abstract

Purpose

Most medical schools value and seek to create opportunities for students to learn through experiences in the longitudinal care of patients. A number of innovative programs have made longitudinal care the central experiential component of principal clinical year education.

The authors sought to identify ways in which learning through the longitudinal care of patients in an innovative longitudinal integrated clerkship contributes to the education of students in their principal clinical year.

Method

The authors reviewed 16 narratives written by 14 of the 38 students from

the first four years of the Harvard Medical School–Cambridge Integrated Clerkship, 2004–2007, to identify important aspects of learning from longitudinal care.

Results

Students reported that the clerkship structure created a dynamic learning environment that helped them to more broadly learn about their patients' diseases and experiences of illness. Students described feeling deeply connected to "their" patients, which transformed their roles and inspired their reflections. With more thorough knowledge of their patients over time, they felt they made important contributions to their patients' care, not

only in providing emotional support but also in bridging gaps in the delivery of services and in motivating deeper exploration into relevant medical and social issues. Students reported that their connections with patients over time inspired a sense of idealism and advocacy.

Conclusions

Organizing learning in the principal clinical year around longitudinal patient care seems to offer significant advantages for learning and professional development.

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The current environment of medical care poses serious challenges to the clinical education of medical students. As medical management moves increasingly into ambulatory sites, students on traditional inpatient block rotations are exposed to a narrower spectrum of illnesses. Many common and important illnesses are diagnosed and managed without hospitalization. Most student exposures to patients with undifferentiated symptoms occur in ambulatory settings or in the emergency department, but often without reaching a

definitive diagnosis or seeing the result of treatment. Traditional third-year students often begin to participate in care after the radiologic or pathologic diagnosis has been made, and even after the initial treatment has been administered, leaving students to learn differential diagnostic reasoning and therapeutic planning passively and retrospectively. Also, the brief lengths of stay and the fragmentation of care across specialties and across sites create obstacles to students' learning to engage in effective therapeutic relationships. Major national organizations have called for changes in the principal clinical year to address these challenges.^{1–5} In addition, many have called for the restructuring of clinical education to address the erosion in humanism that occurs during the clinical years of medical school.^{6–10}

Students need to actively participate in the fundamental processes of doctoring to acquire practical expertise and to grow into their professional roles.¹¹ To ensure that clinical education provides students with authentic experiences of caring for patients, we and our colleagues have

called for using *continuity* as the organizing principle.¹² A number of innovative programs are based on continuity of care through the entire course of an acute illness or a significant portion of the course of chronic illness.^{13–19} In these programs of 6 to 12 months' duration, students complete the majority of the clinical curricula of the disciplines required in the principal clinical year. In contrast to many longitudinal ambulatory programs, which emphasize continuity of care experiences as a way to teach primary care and office practice, longitudinal integrated programs view the continuous care of patients as the central experiential structure around which students' learning is constructed.

We believe that longitudinal patient care facilitates students' learning in several key ways. It provides more time for students to develop relationships with patients, enabling the understanding of patients' values and social contexts and fostering mutual understanding that may allow students to overcome stereotypes that impede empathy and accurate clinical judgment.²⁰ With repeated contacts, the patient sees the student as a legitimate

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member of the care team and, thus, worthy of trust. The enhanced quality of the relationship and the student's sense of being able to truly contribute to care can become powerful motivators to the student's pursuit of knowledge in service to the patient's care.²¹

Longitudinal patient care provides other potential benefits beyond the opportunity to form and be motivated by strong relationships with patients. It enables students to participate in the clinical interaction in a prospective rather than retrospective fashion: students engage with patients with undifferentiated symptoms and learn to interpret the history, physical examination, and laboratory results as they elucidate diagnostic reasoning and therapeutic planning. They witness transitions of care firsthand and learn the importance of working with other members of the health care team.²² They learn to understand the realities of effecting behavior change.²³ They learn medicine in all of its complexities and uncertainties and value the opportunity to follow real patients through the course of illness.²⁴

Continuity of student involvement with patients has the potential for improving patient care, just as continuity of care has been shown to improve quality by decreasing the likelihood of hospitalization,²⁵ improving rates for preventive interventions,^{26–28} improving patient satisfaction,²⁹ increasing patient trust,³⁰ and improving adherence. Residents believe they provide better care to patients they get to know over time,³¹ and patients' diabetic control improves when there is more continuity of resident care.³² Many of the relational and coordinating tasks of continuity of care are well within the scope of a third-year medical student. Thus, connecting students with patients in longitudinal relationships offers the potential for enhancing the patient's access to coordinated care.

Despite these theoretical benefits, and despite the value placed on providing students with learning experiences of continuity of care,^{3,33} there is little in the medical literature to empirically assess students' learning through the longitudinal care of patients. Many "longitudinal" ambulatory programs are added on to traditional block clerkships, and continuity of care experiences

become more likely as the duration of the clerkships increases.^{34,35} However, students in these ambulatory programs rarely have more opportunities to follow patients longitudinally than students in traditional clerkships without such ambulatory experiences.^{36–38}

In this report, we describe, through the use of students' narratives, what those students learned from the longitudinal care of patients in the Harvard Medical School–Cambridge Integrated Clerkship (HMS-CIC), a program in which the entirety of their principal clinical year is in longitudinal clerkships rather than in block rotations.¹³ The HMS-CIC was initiated in 2004 as a pilot innovation for the Harvard Medical School (HMS) medical education reform initiative. Students are selected by lottery from a pool of volunteers. It is based in a single institution, the Cambridge Health Alliance. The students' main educational activities are structured around their longitudinal and simultaneous care of cohorts of patients in internal medicine, neurology, obstetrics–gynecology, pediatrics, psychiatry, and surgery. Each student follows his or her cohort of patients across venues of care, as their patients' needs dictate.

Method

A total of 38 students from the first four years of the HMS-CIC (2004–2007) were invited to submit narratives of their experiences with patients that they believed "described the ways in which the longitudinal care of patients had influenced their learning." The exercise was not for academic credit. Given the exploratory nature of the project, a grounded theoretical approach was used; thus codes were derived from the data. A total of 14 students submitted 16 narratives. After we read the first four narratives to develop consensus themes, we analyzed all 16 narratives. As new themes were identified, all narratives were recoded. We agreed on most themes, with occasional disagreement when student themes were felt by one of us to be implicit rather than directly stated. In those instances, the themes were not used. The themes were validated through review by a focus group of seven former and then-current HMS-CIC students, including some contributors and some noncontributors of narratives, and by review of the manuscript of this

report by the eight student contributors. We then grouped themes into clusters and selected examples for presentation.

Results

Sixteen narratives about longitudinal care were submitted by 14 of the 38 students who participated in the first four cohorts of the HMS-CIC. We identified 33 themes in the students' narratives (see Table 1). We organized the themes into six clusters:

- Creating a dynamic integrated learning environment
- Providing a broader understanding of all aspects of illness
- Permitting a deeper connection with patients
- Transforming the student's role in ways that were challenging and also empowering
- Improving patient care
- Inspiring commitment, advocacy, and idealism

We describe below these clusters of themes, using examples from the students' narratives.

Creating a dynamic integrated learning environment

Many students found that longitudinal care fostered a sense of intellectual and multidisciplinary inquiry. Their learning was not artificially bound by the discipline in which they were rotating. They saw that following patients across disciplines helped give them both the generalist's overview and the specialist's depth of perspective on the patient's problems.

"This is a lovely 30-year-old pregnant woman with Protein S deficiency." Where it goes from there depends on the audience. For the neurologist, it was "who presents at seven weeks pregnant with a lifetime of HA with visual S." For the MFM doctor, it was "an otherwise uncomplicated pregnancy, being anticoagulated on daily lovenox." For the ED doctor, it was "who presents at 16 weeks pregnant with two episodes of postcoital spotting." For the OB it was "presenting at term for induction of labor because of oligohydramnios" For the postpartum team, it was "whose baby girl was born by uncomplicated vaginal delivery." Ultimately, I saw Ms. P with six different providers in six different settings

Table 1

Themes From Students' Narratives of Longitudinal Care Experienced in the Harvard Medical School–Cambridge Integrated Clerkship, 2004–2007*

Theme cluster and associated themes	No. of student narratives embodying theme
Creating a dynamic integrated learning environment	
Patient is the site of multidisciplinary integration.	13
Student's prior knowledge of patient permits revisiting themes at a higher level.	6
Longitudinal care provides exposure to complex and acute patient care.	11
Longitudinal care provides an opportunity to evaluate an undifferentiated illness.	7
Longitudinal care engages students in issues like prevention/communication.	4
Providing a broader understanding of all aspects of illness	
Longitudinal care allows for understanding the whole course of illness.	14
Longitudinal care fosters understanding of the health care system.	3
Longitudinal care allows the student to see patient care as it unfolds.	14
Permitting a deeper connection with patients	
Longitudinal care creates a strong interpersonal bond between student and patient.	14
Longitudinal care allows the student to get to know the patient in the context of family/community.	13
Longitudinal care promotes empathy.	11
Longitudinal care fosters a sense of duty/commitment/ownership.	12
Longitudinal care allows the student to see the patient as a person.	13
Longitudinal care helps create a student–patient team ("my personal medical student").	7
"Difficult" patients evoke caring rather than disdain.	5
Deep engagement with patients leads to reflection and self-awareness.	9
Transforming the student's role	
Students take on more responsibility than in traditional student rotations.	7
The sense of responsibility creates confusion and the feeling of being overwhelmed.	4
There is a blurring of boundaries between doctor and friend.	3
Having an authentic role in caregiving provides a clearer window into career choices.	1
Improving patient care	
Students bridge the gaps in the health care system.	10
Students contribute to better care.	10
Having the patient at the center of care inspires collaboration with other students.	4
A student's prior knowledge of the patient permits a contribution to diagnosis.	3
The student provides comfort and support to patient.	13
Inspiring commitment, advocacy, and idealism.	
The care of the patient inspires learning.	12
The patient's illness cannot be categorized by a single medical discipline.	12
Students view patient-care experience as privilege and inspiration.	9

(Continued)

and was inspired to learn and relearn information about migraines, prothrombotic disorders, abnormal uterine bleeding, and normal labor and delivery. The first baby I ever delivered belonged to a family I had known for nine months.

—Student CC, from the first year of the HMS-CIC, now a resident in obstetrics–gynecology

In addition, students viewed the multidisciplinary integration that their involvement provided as authentic and appropriate to good patient care, as patients could not be neatly categorized by medical disciplines. In contrast to didactic integration sessions more typical of traditional programs, as one student put it, "The *patient* is the true integrator."

Providing a broader understanding of all aspects of illness

The deeper perspective on the experience of illness through participating in care across the whole course of the illness was a common theme in students' stories.

Yet later, after months of broad-spectrum antibiotics, Ms. O continues to experience a rocky course. The integrated clerkship has allowed us to follow her care through different institutions; to visit her in a cross-town hospital, and to admit her with fevers and anemia. Through Ms. O we have learned about issues ranging from abscesses to malnutrition, from feeding tubes to skin ulceration. We have seen a strong and smart woman grow delirious and unintelligible. Each time we see Ms. O, attempting to understand her evolving health adds another piece to our medical repertoire. Each time we grow to understand a bit more about the toll that hospitalizations and chronically deteriorating health can have on a patient and her family.

—Student JS, from the first year of the HMS-CIC, now a resident in internal medicine

Because they were able to follow this patient from her first presentation with a fever of unknown origin through a prolonged course of diagnosis and treatment, these students participated actively in the clinically relevant diagnostic reasoning and therapeutic planning. They witnessed the successes and complications of therapy and the impact on the health of a woman they came to know well. In addition, they had a firsthand view of the various venues across which care must be coordinated. This deeper perspective on the health

Table 1
(Continued)

Theme cluster and associated themes	No. of student narratives embodying theme
Students have feelings of empowerment for having a significant role in patient care.	6
Longitudinal precepting provides modeling of the doctor–patient relationship.	6
Longitudinal care prevents cynicism and maintains hope.	5
Longitudinal care exposes the hidden curriculum and unprofessional behavior of others.	2
Longitudinal care is an inspiration to advocacy.	7

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care delivery system was another common theme in students' stories.

The integration of behavioral sciences with clinical sciences was an implicit theme in students' narratives. Several students described a sense of comfort and accomplishment in caring for patients with complex social struggles, patients who are often labeled as "difficult."

S was a patient introduced to me by my medicine preceptor. He said, "He's a heavy drinker, former crack/cocaine and IV drug user, he's got AIDS, Hep B and C, cirrhosis, and ITP. He keeps getting readmitted for thrombocytopenia, and he isn't that compliant with his HIV drugs."

I followed S over time, going to his infectious disease and hematology appointments. He really was a lovely guy. A little confused—all those years of drug and alcohol abuse had taken their toll—non-English-speaking, and illiterate to boot, but really a sweet guy. He was born on a farm in rural Minas Gerais. He only completed second grade before dropping out of school to work on the farm. There wasn't a lot to do in rural Minas Gerais, and at the age of 12 he started sniffing glue and abusing over-the-counter, alcohol-containing cold syrup. Eventually he graduated to harder drugs and liquor. He knows his health is not great and there's a good chance he will not live much longer, but he would like to enjoy his life as much as possible while he's still here. And that involves occasional drug use. He is also somewhat lonely here, and has struggled with depression, and doesn't like that so much of his time is taken up going to doctors' appointments.

—Student MG, from the second year of the HMS-CIC, now a resident in emergency medicine

As this student followed his HIV+ immigrant patient over the course of the year, he had the opportunity to learn about the social and psychological factors that affected his patient's health, an opportunity that rarely occurs in traditional programs.

Permitting a deeper connection with patients

Every student narrative affirms the importance of longitudinal care in the creation of meaningful therapeutic bonds and in the inspiration to learn. Students describe this connection as activating their sense of duty. Their emotional connections to patients, whom they came to know in many contexts, inspired them to engage tirelessly in the care of people they perceived as "their" patients.

When my preceptor first assigned Ms. S to me—listing her PMH took minutes—I got that lurch of anxiety about managing such a complex patient. Her medical problems—including CHF, atrial fibrillation, poorly controlled type 2 diabetes, morbid obesity, restrictive lung disease with recurrent pneumonias, small bowel obstruction with ischemia s/p resection with end-ileostomy, osteoarthritis, immobility, and decubitus ulcers—were as overwhelming as her huge, positive, powerful personality.

I had the opportunity to follow her through nine months of inpatient and outpatient management, including GI surgery, diabetes control, respiratory failure, cardiology (CHF and afib), skin breakdown, pain management, challenging physical therapy, MRSA, ICU management, and end of life care.

In any learning situation other than a yearlong relationship, I would never have

understood Ms. S's complexity, her essence, and what it takes to really manage well a complicated, chronically ill patient over time. Had I seen her in the context of a monthlong inpatient hospital rotation, I probably would have had more of a "damage control" approach to her problems, achieving just enough health to get her out the door, not with the more important aims of living happily and without pain in her rich life.

—Student JR, from the first year of the HMS-CIC, now a resident in pediatrics

Students noted that in getting to know patients over time, they developed a deeper understanding of and empathy for their patients. They believed that this deeper empathy resulted in better care for patients and in fewer feelings of frustration and burnout for them as providers.

Transforming the student's role

Several students described uncertainty about their role in these intense patient–student relationships, either a blurring between the role of friend and that of care provider, or the pressure of being viewed by the patient as fully responsible for their care.

Without me I can confidently say this illiterate, non-English-speaking patient, even with his very supportive and involved family, would have fallen through the cracks. The number of appointments and communications and miscommunications would have been so numerous, and it would have taken so long, that he probably would have just stopped showing up.

In the end, it felt like such a great accomplishment to have arranged this operation. When it finally happened, I was able to be there in the OR and participate. It was so great to have been a part of this from beginning to end and to understand really how much had gone into actually getting him on the operating table. I was also filled with apprehension—What if it didn't work? Even worse, what if something went wrong? I felt I would be partially responsible.

—Student MG, from the second year of the HMS-CIC, now a resident in emergency medicine

Despite this sense of uncertainty about their role as student or as care provider, they welcomed their increased responsibility and the contributions they made to patient care.

Improving patient care

Several narratives described improved patient care as a result of students' participation. Students often found themselves bridging gaps in the delivery system: by enabling more effective communication among providers, by translating physicians' comments into plain language, by ensuring that patients did not get lost to follow-up, and by carefully researching clinical questions relevant to patients' care.

I was her continuity, which helped her care—helped residents who didn't know her upon ED presentation for respiratory distress, when she would often get delirious and not be able to communicate. This was especially helpful for figuring out her med list, calming her anxiety, and helping residents understand her complexities. As I followed her in and out of hospitals, I learned what exacerbated her conditions and what determined how she recovered for discharge.

—Student JR, from the first year of the HMS-CIC, now a resident in pediatrics.

Inspiring commitment, advocacy, and idealism

Serial connections with patients over time inspired students to become their advocates. In many instances this advocacy manifested in individual acts of beneficence, improving the well-being of "their" patients and their patients' families. In some instances, students were motivated to take advocacy for their patients' causes to the institutional level, such as speaking to hospital administrators, and even to the societal level via publications³⁹ or public policy activism.

I met M in the emergency room, a 25-year-old man, 5,000 miles away from his home, struggling to breathe. The story as it circulated the wards was short and tragic: "Undocumented guy from Brazil with a tremendously dilated heart in florid pulmonary edema." In the absence of real knowledge about M, the person behind the weathered skin, illegal status, and crooked teeth—and in the face of a tacit reality (he was not going to get a heart)—a justifying narrative had developed. In the narrative, "binge drinker" became "alcoholic." When I confronted the medical team, the general consensus was that it really did not matter because he was not eligible for a heart "because of his illegal status."

Since M's death I have been supported by my preceptors to explore the ethical,

personal, and public health aspects of my experience. Exploring my experience to gain insights that could improve medical care and advance social justice has been a crucial part of coming to terms with what happened, my role in it, and the reality of social injustice. I believe very strongly that the profound sense of duty that I developed towards M was a product of my unique longitudinal experience with him that bonded us together and required me to take responsibility in a way I would not traditionally be asked to do.

I spent an elective week on the wards as a third-year clerk on a traditional trauma rotation. One night on call, I helped care for a young woman who had been shot in the face at point-blank range. The next day she was one of 30 different patients I rounded on. The personal tragedy of what happened to her never really took hold in me. Intellectually, I can explain how her individual case highlights the ongoing social ills of violence against women and the proliferation of handguns, but the personal impact on me was diluted by the pressing needs of the surgical team that I was a part of.

—Student AH, from the second year of the HMS-CIC

In this student's experience, his involvement with a desperately ill patient who encountered obstacles within the health care system transformed his understanding of the responsibilities of the physician to a patient. Other students reported similar experiences.

When I first met Ms. L, she was curled up in a chair, shielding herself with one knee tucked under her chin. Ms. L told me details of times that she had been ill, what medications she was taking, that she had come to have her first colonoscopy. Then, in the same tone in which she had described a past elbow injury, she disclosed how she had been raped by a doctor 10 years ago. Her procedure was scheduled, and Ms. L left abruptly.

Because of the longitudinal nature of my clerkship, I was able to attend her preoperative appointments. I watched as a well-meaning nurse grabbed her arm to measure her blood pressure, causing Ms. L to jerk away from the sudden contact. I saw the terror in her eyes as the anesthesiologist described the sedation procedure, thinking of how the idea of sedation was threatening enough for the average person, let alone for someone who had been brutally disempowered. Yet I could tell that she was beginning to trust me—and trust the doctors who took the time to explain in detail what would happen.

Ms. L was the first patient I met with PTSD and the first patient who I felt

actually benefited from the presence of a medical student. I saw immediately how she could be lost in the system or even hurt by well-meaning individuals who were not aware of her needs. I learned how body language and affect could provide an invaluable message about how to best approach a patient. Lastly, I realized that had I not been there to make sure people were especially sensitive to respecting her boundaries, she may have experienced even more trauma. This knowledge provided me with the impetus to directly involve myself in her care by talking to the doctors and staff about her needs. It made me realize that as a doctor caring for disempowered people, I needed to be powerful—to use whatever assets I had to improve her care.

—Student SA, from the fourth year of the HMS-CIC

Students described feeling empowered in finding meaningful ways to contribute to their patients' care. Students noted the importance of longitudinal mentoring both in modeling and directing avenues for advocacy.

Several student narratives described how their connections with their longitudinal patients made them acutely aware of breakdowns in professionalism on the part of other caregivers.

When the pathologist called back and reported evidence of invasive adenocarcinoma, my heart felt like it slid down into my abdominal cavity. One of the surgeon's subsequent comments (followed by uproarious laughter) that "You better get yourself some new longitudinal patients, because this guy isn't going to be longitudinal too much longer" turned my feelings of intense sadness into anger. "How can they laugh?" I thought, my entire body heating up with fury. My friend is dying and they're laughing.

—Student RB, from the second year of the HMS-CIC, now completing her PhD in neuroscience

Students in the HMS-CIC were not continuously exposed to the traditional "hidden curriculum,"⁴⁰ the highly influential culture of inpatient and other learning environments. The students' site of learning was not place-, team-, or specialty-specific, but rather resided wherever their patients' needs arose. Thus, they did not learn the defense mechanisms that staff commonly adopt in intense inpatient settings¹⁰ but, instead, maintained an orientation that was patient- rather than process-

centered. This sometimes led to complex emotional responses. Students valued the opportunity to reflect on these challenges.

The depth of F's influence is beginning to become clear. I've heard traditional third-year students describe their horror at the sight and smell of the necrotic feet seen in vascular clinic. It had never occurred to me to be disgusted by F. When we noticed the first signs of an ulcer on her toe and when erythema gave way to necrosis, then osteomyelitis, I remember feeling concern, but not disgust. And when we finally had to serially amputate her forefoot, I remember thinking only that I wanted to do right by her—to find vital tissue. You see, F is a real woman with real troubles, joys, and fears. When her wounds need tending—I tend them. I don't worry about whether they're gruesome or hopeless. The integrated clerkship has taught me to focus on the tasks for which I came to medical school: to serve the person with and beyond the disease.

—Student DF, from the first year of the HMS-CIC, now a surgical resident

Students felt that their connection with patients genuinely buffered them against the development of the cynicism they saw in their traditionally trained colleagues. More important, they viewed their deep connections with patients over time as reaffirming of their potential to become the kind of doctors they had hoped to become.

Discussion

In our analyses of students' longitudinal caregiving experiences, we found a number of themes. Students believed that they learned much more deeply about patients' experiences of illness, both physical and psychological. They also believed that they developed a detailed understanding of the health care system, with its strengths and its gaps. Central to their experiences was the feeling of deep connection to patients, which students believed inspired them to learn about their patients' illnesses and to be advocates for their patients' needs. Students felt they had a real role in their patients' care.

On occasion, students felt overwhelmed and challenged by their longitudinal relationships with patients. They struggled to learn appropriate professional boundaries, at times feeling more like their patients' friends, at other

times more like their patients' primary doctors, a role that was beyond their level of competence. To address these concerns, longitudinal programs must provide opportunities for supervision and reflection on professional boundaries.⁴¹ Despite these challenges, students welcomed the increased responsibility.

Our study had significant limitations. It was a sample of narratives of volunteer students in the first four pilot years of a redesigned curriculum. Thus, their comments cannot be assumed to be generalizable to students who are participating in other longitudinal integrated clerkships. In addition, we did not compare these narratives with those of students working with patients within traditional clerkships. We solicited students' opinions on the value they perceived in learning through longitudinal patient care, which may have limited students' negative comments, although several students did describe their feelings of being overwhelmed and confused about their roles. Despite these limitations, we believe the students' comments are eloquent and suggest that their longitudinal experiences were both moving and motivating.

As medical practice continues to become more specialized and fragmented, patients may feel alone and unsupported, and learners' intellectual processes of diagnostic and therapeutic reasoning may lose coherence when patients are handed off too many times. Medical educators have attempted to address these concerns largely by adding ambulatory continuity experiences, where students typically are exposed to common office problems, and some chronic care. By contrast, longitudinal integrated clerkships ground almost all of students' learning in the longitudinal care of patients. We have presented examples of students' narratives of learning in the context of providing longitudinal care to patients that affirm students' beliefs that these experiences inspired them to learn and powerfully promoted attributes of patient-centeredness and professionalism.

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