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REVIEW

# Portfolios: A Tool for the Training and Assessment of Residents in Dermatology, Part 2

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**Abstract** A portfolio is a collection of material documenting reflection about practice. It contains documents (eg, case histories and questionnaires the resident has used), images, and video recordings that reveal that an individual has acquired the competencies needed for professional practice. This assessment tool simultaneously supports learning and provides evidence for certifying competence. The adoption of portfolio use by a dermatology department requires the support of both the training supervisor and the chief of department. The learning objectives defined by the National Board for Medical-Surgical Dermatology and Venereology must be taken into consideration so that ways to assess each objective can be included; this approach supports holistic ongoing education as well as the certification of competencies the resident finally achieves. Use of portfolios in medical residency training can improve on current assessment methods, which we believe lack precision. We propose that portfolios gradually begin to replace the resident's training log. We are currently developing an online software application that will facilitate the use of portfolios.


**PALABRAS CLAVE**
Portafolio;
Docencia;
Residentes;
Aprendizaje

## El portafolio como herramienta de formación y evaluación de los residentes de Dermatología (II)

**Resumen** El portafolio es un cuaderno de aprendizaje basado en la reflexión sobre la práctica diaria. Consiste en una recopilación de documentos (historias e informes clínicos), encuestas, fotografías y videograbaciones que permiten certificar la adquisición de las competencias necesarias para ejercer una profesión determinada. Sirve al mismo tiempo como instrumento de evaluación, tanto formativa como sumativa, ya que permite

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aglutinar diversos métodos de evaluación. Para su introducción en un Servicio de Dermatología se requiere el apoyo del tutor y del jefe de servicio. Debería incluir los objetivos de aprendizaje definidos por la Comisión Nacional de Dermatología Médico-Quirúrgica y Venereología, adecuando las metodologías de evaluación a cada uno de ellos, lo que facilitaría una formación más global y que la evaluación sumativa anual del residente fuera más objetiva. La incorporación de esta metodología a la formación médica especializada puede proporcionar una mejora del sistema de evaluación actual, que consideramos que es poco preciso. Proponemos que el portafolio sustituya progresivamente al libro del residente. Tenemos previsto desarrollar una aplicación on line que facilite su cumplimiento.


## Introduction

Teaching hospitals have a responsibility to society to ensure that the medical residents they certify are properly trained. One of the most useful tools for accomplishing this task is the portfolio,[1] a collection of material that documents the learning process. A portfolio starts with a list of the competencies the medical resident must acquire, including not only medical knowledge and diagnostic and therapeutic skills, but also oral communication skills and the attitudes and values appropriate for a physician, such as empathy with the patient, ethical principles, a scientific approach to medicine, and an interest in learning. By defining these competencies from the outset, the portfolio serves as a guide that helps residents to focus on their personal training goals and acquire knowledge in a more orderly fashion.[2,3] The portfolio also serves as a depository for evidence of acquired competencies, facilitates the task of monitoring the resident's progress in clinical practice, and stimulates self-directed learning by encouraging reflection on cases encountered in daily practice. In this process, the resident comes to suggest and set personal goals and tasks. Use of this tool has been shown to have a positive impact on the overall, well-integrated training of medical residents.[4,5] The holistic picture provided by the portfolio is perceived to be one of its principal strengths.[6]

At the same time, the portfolio can also serve as an assessment tool, facilitating the combined use of a variety of different formative and summative methods to assess the resident's acquisition of the competencies within each domain. Mastery and knowledge must be assessed both to evaluate the quality of the educational process and to certify that the resident is competent to exercise the profession of dermatologist.[2,7,8] A portfolio can be used to evaluate the objectives attained in each rotation, to monitor the resident's progress throughout training, and for the final assessment.

If the portfolio is to be used for assessment purposes, it must be used for the summative assessment and, therefore, be mandatory for all residents. It is also important to use an online portfolio because research has shown that the use of an electronic model improves trainee compliance.[3]

In the first article in this 2-part report, we discussed the concepts of reflective leaning, the critical incident, and the structured formative interview, and proposed a semistructured portfolio model that would define the competencies to be acquired.[9] In this second part, we focus on how to implement this model in a dermatology department and how the portfolio can be used to support both the formative and summative assessment of medical residents.

## The Portfolio in Formative Assessment

Feedback from the training supervisor or mentor (called a *tutor* in the Spanish system) is an important component of portfolio learning, and there is evidence that this resident-tutor interaction has a positive impact on learning.[10] Initially, the interaction takes place on an almost daily basis. Later, it becomes less frequent and more formal, occurring in the context of structured interviews which allow the tutor to ascertain whether the resident is progressing well and acquiring the competencies stipulated in the quarterly plan.

Knowledge competencies can be formatively assessed by analyzing the critical incidents selected by the resident and the reflective work triggered by these events (see part 1 of this 2-part series).[9] Working through an average of 2 critical incidents per month is usually sufficient for the resident to acquire most of the targeted competencies. Clinical judgment can also be assessed on the basis of a reasoned summary of the medical history of a patient with a long-running chronic inflammatory skin disease. The summary should cover the patient's quality of life and the risk/benefit ratio of the treatment prescribed. Another similar exercise would be to summarize the case history of a patient with a tumor for which several treatment options are possible. The medical knowledge of trainees is usually assessed, however, by examinations based on clinical cases. To further enhance the learning process, the results of all such assessments should be discussed by the tutor and resident and should be included in the portfolio.

Workplace-based assessment (WPBA), a method in which actual practice is assessed against predetermined standards, is another key component of the portfolio learning system.[11,12] WPBA has a clearly educational function because direct observation provides the basis for feedback and the planning of future training. We believe that this approach is particularly useful for assessing residents specializing in dermatology because the field is characterized by a wide range of diagnostic and therapeutic techniques. WPBA can also be used to assess patient interview technique against predefined criteria (Table 1). The indicators used include how the physician greets the patient, verbal and nonverbal

**Table 1** Criteria for Evaluating Patient Interviews

| |
|---|
| Empathy with the patient |
| Presentation of the resident in his or her role as physician |
| Verbal and nonverbal communication |
| Open questions |
| Appropriate closed questions to establish a diagnosis |
| Physical examination. Correct description of lesions. |
| General physical examination in systemic diseases and tumors with possible metastasis. Examination of mucosa and adnexa |
| Notes on the clinical decision (justification for diagnosis and appropriate treatment giving reasons for choice) |
| Detailed explanation to the patient of the following: |
| The diagnosis in a calm and understandable manner |
| The further investigations and tests required |
| The medical or surgical treatment that may be prescribed, explained in such a way that the patient is able to remember this information when he or she leaves the consulting room, with informed consent when necessary |
| The preventive measures that should be taken (against infections, especially sexually transmitted diseases, and tumors) |
| Efficient time management (10 to 20 minutes depending on the disease and the level of the resident) |

communication, the focus of the questions asked, the data collected, as well as how the clinician informs the patient about the diagnosis and the additional tests required and negotiates a treatment plan. Based on notes taken during the interview, the tutor provides feedback to the trainee on both the positive aspects of his or her practice and the areas that need improvement. The resident's ability to effectively present a scientific paper can also be assessed using this type of direct observation (Table 2). In addition to the content of the presentation, which should be evidence-based whenever possible, the tutor also takes into account the formal aspects (the resident's bearing and appearance, slide quality, respect for time constraints) as well as the resident's communication skills (naturalness, gestures, professional delivery, voice modulation, and nonverbal communication). WPBA can also be used to

**Table 2** Criteria for the Evaluation of the Oral Presentation of a Scientific Paper

| |
|---|
| Resident's appearance and bearing |
| Presentation |
| Content (introduction, material and methods [or case report], results, and discussion) |
| Presentation of evidence |
| Quality of the slides (color of background and letters, size and type of letter, layout and quality of images) |
| Choice of conclusions (message) |
| Public speaking skills and body language (naturalness of style, gestures, professional delivery, voice modulation, nonverbal communication) |
| Ability to communicate with an audience |
| Keeping to the allotted time |

**Table 3** Criteria for Evaluating Surgical Procedures

| |
|---|
| Behavior in the presence of the patient |
| Correct scrubbing technique (rated against predefined standards) |
| Infiltration of anesthesia (first year of residency) |
| Use of appropriate surgical technique (wedge, flap, or graft) and reasons for choice |
| Choice of lateral and deep margins |
| Control of bleeding |
| Choice of needle and suture thread |
| Correct choice of flap and alternatives (depending on the site of the tumor) |
| Flap technique |
| Wound care and dressings |
| Instructions about subsequent wound care |

assess a resident's performance as principal surgeon in surgical procedures (Table 3). The tutor, acting as assistant surgeon, makes a mental note of any errors and at the end of the resection gives the resident feedback on details that need to be corrected. In this way, the areas needing improvement are identified and additional training can be planned. As noted in first part[9] of this 2-part series on portfolio assessment, the practice of objective structured clinical evaluation, which is a highly useful method based on role play,[4] is gradually being replaced by WPBA, the ideal method for the assessment of real clinical practice.

Video recordings can also be used in the same way for assessment purposes. The advantage of the video recording is that, being retrospective, it can be analyzed without the presence of the patient at a convenient time. Together, the tutor and resident analyze the video recording of an interview conducted by the resident and discuss the shortcomings and errors detected; the aim is always formative. It should be remembered that patients must always give prior consent if an encounter is to be recorded and, as in the workplace-based situation, the resident's performance should be judged on the basis of previously defined standards. Such recordings can also be used to assess certain surgical competencies using an approach similar to that of WPBA. Likewise, recordings offer a useful way to assess public speaking skills, allowing review and discussion of the presentation of a scientific paper at a meeting or conference. In both cases, the resident should be advised in advance of the indicators that will be assessed.

The audit is another method of formative assessment. While it generally involves the analysis of case histories and clinical reports, the method can be applied to all types of records, including quality-of-life evaluations. An audit is also a form of retrospective assessment of clinical practice. The tutor reviews medical records compiled by a resident to detect deficiencies and propose modifications where necessary. The records must be assessed against previously defined standards. When this exercise is undertaken independently by the resident, it is called a self-audit.

The 360-degree assessment (Appendix 1) is a tool for evaluating the resident's interpersonal skills and ability to build relationships with patients and colleagues. It

involves the use of standardized questionnaires filled in anonymously to provide confidential feedback; the results are only accessible to the tutor and the resident. One of the questionnaires is completed by the resident and others are answered by the tutor, an attending physician, another medical resident, a nurse, and a patient. Agreements and discrepancies between the responses are discussed to identify the reasons for them and to resolve any problems that may come to light.

Because images are particularly important in dermatology, many of the dermatologist's skills can be assessed through joint analysis of photographs. These may be clinical photographs or dermatoscopic and dermatopathologic images. The tutor and the resident analyze the images together and the tutor questions the resident on important details to detect conceptual errors. This exercise can be used to develop a work plan. Using a clinical image, the tutor can explain and, at the same time, ask novice residents questions about the details that differentiate an inguinal rash or a pigmented tumor. With a more experienced resident, the tutor might review a dermatopathologic image of a CD30-positive lymphoma and ask the trainee to describe the histologic characteristics of the different types of anaplastic cell lymphoma along with their prognosis and treatment. Although this method does not assess the resident's ability to communicate effectively with patients and lacks the tactile input obtained from palpation, it can nonetheless be used to assess the resident's diagnostic skills and clinical judgment.

To assess a resident's interest in science, a tutor can ask for a critical appraisal of an article, including assessment of the appropriateness of the methods used to meet the objectives and of the commentary on the results found. The number of presentations to be made and papers to be written can also be set at the beginning of the year. Research has shown that the tutor plays a crucial role in fostering the scientific activities of medical residents. In a recent study, the number of papers, publications, and research projects undertaken and completed by gynecology residents tripled under a mentoring system.[13]

## The Portfolio in Summative Assessment

The use of the portfolio as a tool for learning can lead to an excessively lenient and inaccurate assessment of the resident's skills and knowledge. Spanish legislation regulating the assessment of medical residents[14,15] specifies that, in order to progress from one year to the next, trainees must undergo annual summative assessment. This must be based on the most objective assessment methods possible. The methods currently in use are highly subjective and in some cases lead to higher scores for the more pleasant and even fawning resident and more rigorous scoring of more assertive individuals. More objective and precise assessment methods are needed to eliminate potential bias.

Research has shown the portfolio to be an ideal instrument for ensuring the integrative training of medical residents. The portfolio has also been found to be useful in summative assessment,[16] although in 1 study only 20% of the residents considered it to be the ideal tool for this purpose.[10] If the portfolio is to be used for assessment purposes, its use must be mandatory and the model used must be well-designed and semistructured.[1] Making the portfolio the mandatory training log in Medical-Surgical Dermatology and Venereology will oblige residents to dedicate the necessary time to this exercise.

When planning a portfolio that will be used for summative assessment, we must define a scoring system for each of the assessment methods described above methods and assign a maximum score to each task. The standards to be met and the scoring system must be agreed with the resident at the outset. The simplest method for assessing knowledge is an examination based on clinical cases using the short question format. The same method can also be used to assess the trainee's therapeutic skills and clinical judgment concerning the further tests that might be indicated. The cases used in these examinations should always be selected bearing in mind the agreed-upon learning goals. This type of examination is less objective than a multiple-choice test, but the results are a more faithful reflection of the knowledge the resident has acquired. The principal drawback of examinations is the rejection of the method by the trainees. A quarterly examination could consist of between 5 and 10 clinical cases or problems with several questions on each case. The resident's ability to describe lesions and identify basic dermatopathologic and dermatoscopic patterns can be assessed through the analysis of photographs. The 6 critical incidents examined each quarter can also be assessed semiquantitatively. Has the resident analyzed and reflected on the incident in a useful manner? Was his or her clinical judgment correct? Was the differential diagnosis appropriate? Was the therapeutic approach evidence-based and does the record document the literature consulted? The ability of residents to work effectively with colleagues can be assessed using 360-degree evaluation questionnaires, while skills related to communication with patients and public speaking can be rated against predetermined criteria on the basis of video recordings.

In the later stages of training, WPBA can be used to analyze residents' mastery of surgical techniques by rating their performance against predefined criteria to obtain a grade for surgical skills. In the third or fourth year, we can require residents to present a reasoned summary of a course on research methodology they have attended and assign grades to the scientific papers they have presented, the articles they have published, and the research projects they have been involved in. The sum of the quarterly grades for each of these items represents the overall grade given for the final year-end assessment. To further enhance the educational process, the results of all these assessments should be discussed with the resident during the structured interviews conducted throughout the year and included in the portfolio. The assessment methods can, if necessary, be modified from quarter to quarter depending on the competencies being acquired. In some cases the methods used can be personalized and tailored to address a particular resident's shortcomings or adjusted to take into account an individual's preferences.

Finally, we must define the profile of the dermatologist we wish to produce by assigning a percentage to each competency domain evaluated, always bearing in mind the

**Table 4** Profile of the Dermatologist/Assessment of the Medical Resident

| Competency Domains (Assessment Modules) | Competencies (Assign a Variable Percentage Depending on the Resident and the Year of Residency) | |
|---|---|---|
| Knowledge and preventive skills (approximately 25%, varies according to individual and year of training) | Knowledge (according to curriculum for the specialty) | |
| | Clinical judgment | |
| | Diagnostic skills (potassium hydroxide technique and other direct examinations, biopsy and dermatopathology or dermatoscopy) | |
| | Prescribing skills | Topical<br>Systemic |
| | Preventive actions (against pyoderma, tinea, sexually transmitted diseases, skin cancer) | |
| Practical skills (approximately 25%, varies according to individual and year of residency | Cryotherapy | |
| | Curettage | |
| | Electrocoagulation | |
| | Scalpel surgery | Wedges<br>Simple and complex flaps<br>Grafts |
| Values and attitudes (approximately 25%, varies according to individual and year of residency) | Empathy and communication with patient | |
| | Records (patient records, reports, surgery reports) | |
| | Ethical aspects of clinical practice | |
| | Resident's attitudes | Respect for patients and colleagues<br>Attendance and punctuality<br>Ability to think critically and communicate point of view<br>Interest in learning (lifelong learner), motivation |
| Professional and scientific development (approximately 25%, varies according to individual and year of residency) | Interpersonal relationships and teamwork | |
| | Presentations | |
| | Published papers | |
| | Research projects | |

core overall training required. At this stage, a department that wishes to train dermatologists with more potential for scientific research and an academic profile could assign greater relative weight to the area of scientific output, while one that aims to train dermatologists with a more surgical profile could give more weight to the mastery of surgical skills and their assessment by WPBA. The same principal could be applied if the department wished to adapt its training program to the preferences of a particular resident.

## The Professional Profile of the Dermatologist

To quantify the assessment, we start by assigning a relative weight to each module, always bearing in mind the profile of the dermatologist we wish to produce (Table 4). The competencies the residents must acquire are assigned to the modules or domains. At the beginning of each quarter, the learning goals for the next 3 months and the methods that will be used to assess learning outcomes are agreed on with each resident. For example, we might consider that during the

**Table 5** Description of Skin Rashes

1. Elementary lesions (macule, papule and plaque, scaly or smooth surface, nodule, vesicle, blister, pustule, cyst; as well as bloody, honey-colored, and necrotic crusts)
2. Color and configuration of lesions (circular, annular, circinate, geographic, polycyclic, lichenoid, semispherical, acuminate)
3. Involvement of the mucosa and adnexa (hair and nails)
4. Initial site and subsequent clinical course
5. Chronology
6. Morphology of the rash (monomorphic-polymorphic) and pattern of distribution of lesions (symmetrical or asymmetrical; in exposed or covered areas, photoexposed areas, palms and soles, hairy areas, random distribution; erythroderma; isolated and scattered lesions in a "shotgun" distribution)
7. Relationship between the rash and sun exposure, a new medication, or the patient's occupation
8. Treatments applied and response to treatment

first quarter of the second year of training, when residents first come into contact with dermatology, they should learn to describe with precision the elementary lesions (type, configuration, color, consistency) and the characteristics of rashes (monomorphic-polymorphic, grouping of lesions, regional dermatology, symmetry-asymmetry, exposed, photoexposed, covered areas of the body, etc). Competence in this domain could be assessed through joint analysis of 10 photographs, an examination with 10 short-answer questions, an audit of 10 case histories compiled by the resident, or a summary of these 10 cases based on an agreed model defining the aspects that should be included (Tables 5 and 6). If 2 points are assigned to each case, the maximum score will be 20 points. If we consider that the trainee should acquire knowledge about the clinical signs, diagnosis, differential diagnosis, and treatment of common skin diseases and tumors, we could evaluate competence in these areas through joint review of the 6 critical incidents the resident must reflect on and research during the first 3 months of training; these incidents will have been discussed during the structured interviews. If each critical incident is graded on a scale of 1 to 5 according to the degree of reflection and research, the maximum score possible would be 30 points. The basic principles of effective communication with the patient should also be acquired during this first quarter (through tutor feedback and a course on patient interview techniques). This skill could be evaluated by direct observation of 5 clinical interviews (WPBA) or the analysis of video recordings of such encounters. The basis for the scoring should always be agreed with the trainee in advance (presentation, active listening, reasons for the choice of further tests, and negotiation of treatment with the patient). If 3 points are assigned to each case, the maximum score would be 15 points. We might also consider that the resident should learn punch biopsy technique, curettage with electrocoagulation for the treatment of benign tumors, and how to remove small malignant tumors by wedge resection using a scalpel. The trainee must first have learned the theoretical base underpinning these skills, primarily from training received in the course of clinical practice but also through individual study. Mastery of these techniques can be assessed by direct observation of 10 procedures or through retrospective analysis of video recordings. If 2 points at most are assigned to each procedure, the maximum score possible

**Table 6** Description of Skin Tumors

**Skin phototype**

I II III IV V VI

**Tumor characteristics**

1. Skin color (normal, erythematous, violaceous, vascular in appearance, hyperpigmented). In the case of pigmented tumors, describe whether they are monochromatic or polychromatic, the color variations, and whether the edges are regular, irregular or geographic.
2. Surface of the lesion (rough or keratotic, smooth and shiny, smooth and matt, papillomatous, eroded or ulcerous, crusted)
3. Size (mm):
4. Consistency (very hard, hard, elastic, or plaster-like)
5. Dermatoscopic features
6. When the lesion appeared and whether it has grown
7. Site of the lesion or lesions

   Face: forehead, right or left temple, right or left zygomatic region, right or left cheek, right or left preauricular region, right or left eyebrow, right or left upper or lower eyelid, internal or external canthus of right or left eye, base, center or tip of nose, upper or lower lip, chin, and so on.

   Scalp

   Thorax, abdomen

   Back

   Arms, forearms, hands (back, palms)

   Legs, thighs, feet (back and soles of the feet)

   Folds (specify)

   Other (specify)
8. Approximate number of lesions (examine all skin)
9. Dermatoscopic features

would be 20 points. Finally, it is also important during this first quarter for residents to acquire the ethical values appropriate to their profession, including respect for patients and colleagues, how to work effectively on a team, and punctuality. Likewise, they should develop a critical mindset and demonstrate an interest in learning. All of these skills can be assessed by a set of 360-degree questionnaires (completed by the resident, another resident, the tutor, a patient, and a nurse). Despite being quite subjective, these appraisals could be assigned 3 points each, giving a maximum of 15 points.

Starting at the beginning of the second quarter, residents should assume a greater role in choosing learning goals, although these should continue to be negotiated and assessed. Medical knowledge could be acquired primarily through the analysis and review of new critical incidents and be assessed using the methods described above. Residents should start to learn more about the basic dermatopathologic patterns of inflammatory and neoplastic diseases thanks to a part-time rotation in the pathology department and the discussion of specific cases in weekly departmental sessions. Elementary dermatoscopy could also be learned in a dermatoscopy course and in daily clinical practice with patients under the supervision of a skilled physician. Learning outcomes can be assessed by asking residents to view a series of photographs, describe what they see, and elaborate a differential diagnosis.

As mentioned above, mastery of complex surgical skills is acquired through gradually decreasing supervisor intervention and increasing trainee responsibility. The skills thus acquired can be evaluated by WPBA or analysis of video recordings. Trainees begin to acquire the skills they need to speak in public—preparing and giving scientific papers—during the latter half of their second year of residency. However, the writing and publication of scientific articles and the design and implementation of research projects can be left until the third and fourth years. During the fourth year of training, after the basic skills have been acquired, the planning of learning goals and activities can be more flexible, allowing the residents to choose the subjects they wish to focus on, in addition to the critical incidents they encounter in daily practice. This flexibility lets residents whose ambitions lie in the field of surgery to develop the relevant skills, those more interested in research to undertake more ambitious projects so as to get an early start on the field work they will need for their doctoral thesis, and those who aspire to be educators to get involved in the training of other residents and to participate in practical seminars in the faculty or the in-service training of other physicians. The skills and competencies to be acquired should be formulated at the beginning of each quarter together with the assessment method and scoring system that will be used in each case. The aim is to ensure the most objective annual summative assessment possible.

## Implementing a Portfolio System in a Dermatology Department

The way the portfolio system is introduced into the department is just as important as the structure of the model used.[2] The effective introduction of a portfolio requires time. All those involved must be given a clear understanding and practical examples of how to use the tool. Care in introducing the portfolio system will ensure that residents engage with their own learning process. To ensure effective implementation, it should be made very clear to residents that they are the sole owners of the contents of their portfolio, which will remain strictly confidential and accessible only to the designated tutor. All tutors must also be trained in the culture and use of the portfolio. This can be achieved by organizing specific training courses before the system is implemented.

The introduction of a portfolio system in a teaching hospital requires the wholehearted support of the tutors, and the system will not work if there is tension between tutor and resident. The mentoring provided by the tutor is an essential component of reflective learning. Since residents entering the program have not developed the habit of reflective practice, the initial information sessions are very important. At the beginning we consider it advisable that such interaction be one to one, although later general sessions with the participation of all the residents can be organized to discuss and share experiences.[5] These sessions also provide feedback about the system that can be used to formulate changes where necessary. The role of the portfolio as a training tool can also be reinforced during the tutor-resident interviews. These interviews must take place often during the initial months of training, and sufficient time should be set aside for this purpose. The tutor should be proactive about the formative role of the portfolio.[7,8]

We recommend the gradual introduction of the portfolio, at first using it as a training tool that serves to define the competencies that must be acquired and as a place for storing the evidence certifying acquisition of competence. During this initial phase, once the learning goals and assessment methods have been defined, the portfolio should be adapted to the characteristics of the department.[17,18] To ensure effective implementation, the system should have the support of the chief of department and if any conflict should arise the portfolio's formative role should take precedence over and above any other purpose. Based on these criteria, a portfolio may take the physical form of an accordion folder with subsections or a ring binder with pre-punched plastic sheet holders, or it may comprise a set of digital folders arranged in a tree structure in the case of an electronic portfolio. In all cases, an index is essential, and the contents of the subfolders must be organized in chronological order. The initial work method could be to store all new material in a folder pending the tutor's validation. Once validated, the material for each activity could be filed in the appropriate section. During this phase, weekly tutor-resident meetings are essential to reinforce reflective activities and facilitate the discussion of doubts and correction of errors. While these interviews should be structured, the model can be modified to meet the needs of each individual. Later, the use of the critical incident as the basis for reflective learning can be introduced as well as WPBA and the analysis of photographs as formative assessment methods.

The elements required for summative assessment could then be introduced after the use of the portfolio has been consolidated as a training tool (a guide to the competencies required, a means for reflecting on critical incidents, a record of structured interviews, etc) and as an archive documenting the acquisition of skills. These elements could include the

review of clinical cases, the quantification of critical incidents, WPBA, and the review of photographs and video recordings.

## Comments

In Spain, the annual assessment of individual residents is based on the tutor's report and portfolio assessment. We have made the point that portfolio assessment in medical training is not easy, especially in light of the need to strike a balance between predetermined activities that must be certified and the freedom of the resident to choose incidents for reflective learning. However, the portfolio supports a variety of assessment methods and is a tool that can be adapted to the peculiarities of each competency domain.[19] When a portfolio model is designed for educational purposes both the learning goals and assessment indicators must be defined precisely. As these indicators can be monitored, any divergence from the agreed plan can be discussed during structured interviews.

The portfolio can also be used for summative assessment. When used solely for this purpose, it need only contain the materials that document the acquisition of the required competencies, presented concisely for review by the tutor. In an assessment used for decision-making purposes, a reliability value greater than 0.8 is considered acceptable. However, the average reliability of the summative assessment of portfolios has been reported to be 0.63.[8,20] Strategies for improving reliability include the participation of a number of different assessors specifically trained in portfolio assessment and the introduction of double scoring by an external rater in addition to that of the tutor with discussion of results after norming against predetermined standards. Reliability can also be improved by triangulating several assessment methods.[21] The reliability of the system is an important issue when difficult decisions, such as failing a medical resident, must be taken.

Finally, it should be noted that residents generally prefer online electronic portfolios,[14] although there are some barriers to the implementation of the digital format.[16] Electronic portfolios provide more flexible access and can include links and facilitate fluid communication with the tutor, although there seem to be no significant differences in the results of assessment. Residents tend to spend more time adding reflective comments to online electronic portfolios than to paper versions.

Under the auspices of the Spanish Academy of Dermatology and Venereology (AEDV) and the National Committee for the specialty, it is our intention to create an online dermatology portfolio for use in the training and assessment of residents in Medical-Surgical Dermatology and Venereology in Spain. The result should be a basic portfolio model designed to be easy to adapt to most needs and sensitivities and to foster critical input from both tutors and residents.[22] This model can be modified and improved over the following years.

## Conflict of Interest

The authors declare that they have no conflict of interest.

## Appendix 1. 360-degree Assessment

**Resident's Self-Assessment**

**Name of resident:** **Date:**.....

**Name of tutor:**

Score from 1 to 5

1. I communicate effectively with patients.....
2. I communicate effectively with relatives of patients.....
3. I communicate effectively with other professionals.....
4. My technical skills are good.....
5. My clinical judgment is good.....
6. My choice of diagnostic tests is good.....
7. I critically assess the results of tests.....
8. My diagnoses are correct.....
7. I prescribe the appropriate treatment .....
8. I keep good quality patient records.....
9. I take into account the psychological and social aspects of disease.....
10. I manage cases involving complex medical problems.....
11. I coordinate patient care with other physicians and health care professionals effectively.....
12. I am considerate in my treatment of patients and their families.....
13. I respect patient confidentiality.....
14. I respect the rights of patients.....
15. I work effectively with fellow physicians .....
16. I am involved in professional development (further training and building my curriculum vitae).....
17. I accept responsibility for my own professional actions.....
18. I manage health care resources efficiently.....
19. I manage personal stress.....
20. I am aware of my limitations.....

My overall assessment of myself as a professional is:.....

**Assessment of Resident Physician by the Tutor**
**Name of resident:** **Date:.....**
**Name of tutor:**
Score from 1 to 5

1. Communicates effectively with patients:.....
2. Keeps patients' records correctly. Describes rashes and tumors accurately:.....
3. Communicates effectively with colleagues:.....
4. Has the knowledge level appropriate to the year of residency:.....
5. Has the clinical judgment that corresponds to his/her year of residency:.....
6. Selects appropriate diagnostic tests:.....
7. Critically assesses diagnostic information:.....
8. Is considerate of patients and their relatives:.....
9. Has the diagnostic skills (dermatopathology and dermatoscopy) appropriate to his/her year of residency:.....
10. Takes the psychological aspects of disease into consideration:.....
11. Selects appropriate treatments:.....
12. Taking into account the year of residency, has demonstrated the ability to deal with patients who have complex medical problems:.....
13. Respects patients' confidentiality and rights:.....
14. Good interpersonal and teamwork skills:.....
15. Is involved in professional development (continuing education and building curriculum vitae):.....
16. Accepts responsibility for own professional actions:.....
17. Manages health care resources efficiently:.....
18. Is aware of his/her own limitations:.....
19. Attends departmental educational activities regularly:.....
20. Arrives at work punctually and leaves work at the appropriate time:.....
21. Engages in the tasks required and shows an interest in learning:.....
22. Shows initiative:.....

**Patient Assessment of Medical Resident**
**Name of resident:** **Date:.....**
**Name of tutor:**
Score from 1 to 5

1. My doctor spends enough time with me:.....
2. My doctor treats me with respect:.....
3. My doctor shows interest:.....
4. My doctor has told me about preventive measures:.....
5. My doctor has answered my questions satisfactorily:.....
6. My doctor explained my condition in an understandable way:.....
7. My doctor has adequately explained the different treatment options:.....
8. My doctor has clearly explained when and how to use my medication:.....
9. My doctor told me about the problems and possible side effects of my medication:.....
10. I would consult this doctor again:.....

**My overall assessment of the resident as a professional is**

## Appendix 2. Description of Rashes (Include 7 Cases Illustrated With Pictures in the Portfolio)

Medical record number Date
Name and surname of patient Age
Description 1

Medical record number Date
Name and surname of patient Age
Description 2

Medical record number Date
Name and surname of patient Age
Description 3

| | |
|---|---|
| Medical record number | Date |
| Name and surname of patient | Age |
| Description 4 | |
| Medical record number | Date |
| Name and surname of patient | Age |
| Description 5 | |
| Medical record number | Date |
| Name and surname of patient | Age |
| Description 6 | |
| Medical record number | Date |
| Name and surname of patient | Age |
| Description 7 | |

## Appendix 3. Description of Skin Tumors (Include 3 Cases With Photographs in the Portfolio)

| | |
|---|---|
| Medical record number | Date |
| Name and surname of patient | Age |
| Description 1 | |
| Medical record number | Date |
| Name and surname of patient | Age |
| Description 2 | |
| Medical record number | Date |
| Name and surname of patient | Age |
| Description 3 | |

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