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*Indicated for:
- Rheumatoid Arthritis
- Ankylosing Spondylitis
- Psoriatic Arthritis
Rheumatoid arthritis (RA) and spondyloarthopathy (SpA) are potentially debilitating chronic inflammatory arthritides with a prevalence of about 0.3% each in our local population. Due to the advent of effective and relatively safe synthetic and biologic disease modifying drugs, early diagnosis and treatment of these arthritis diseases are the best ways to prevent irreversible joint damage and deterioration in quality of life of our patients. In this issue of the Journal, Dr Helen Chan and Dr Eric Chan will elaborate on the new classification criteria for RA and SpA, respectively. These criteria will help practising physicians to identify the disease early so that timely referral can be made. The classification criteria of systemic lupus erythematosus (SLE) has also been updated recently. I hope the informative summary of the new criteria listed in this issue of the Journal will assist our colleagues in identifying early symptoms and signs of lupus. Children may also be afflicted with chronic arthritis and the management of childhood arthritis is complicated by the physical and mental development of a growing child. Dr Assunta Ho, paediatric rheumatologist at the Chinese University of Hong Kong, will give us a detailed description of the clinical manifestation and diagnosis of childhood arthritis in this issue of the Journal.
In recent years there has been a surge in the number of disputes in courts on legacy. Often in such cases, the validity of a will is called into question, and the testamentary capacity (mental capacity to make a will) of a testator (one who makes the will) is the centre of the debate.

The common law case that has been extensively cited and remains the most important authority for more than 140 years is that of Banks and Goodfellow (1870). However few doctors, and even lawyers, know who Banks and Goodfellow are. Here is the story:

John Banks, who made the famous will, was a draper (seller of cloth). He was born around 1811 and set up his business in Keswick, a small town in the county of Cumbria in Northwest England. He was a successful businessman, and at a relatively young age, he owned 15 houses in Keswick. He had a half brother called Jacob Banks, and a full sister Margaret Banks (Figure 1). In 1838, when John Banks was around 26, he made a will in favour of Margaret.

In 1841, Banks, then about 29 years old, was confined in the county lunatic asylum for the first time. When he was discharged some time later, he continued to harbour a fixed delusion and believed that he was being persecuted by a person named Featherstone Alexander. Despite the death of the latter, he believed the man continued to pursue and molest him, so that the mere mention of his persecutor’s name would throw him into a state of violent excitement.

Five years later, in March 1846, Margaret married a grocer named Thomas Goodfellow (Figure 1). Ten months later, in January 1847, Margaret died, shortly after giving birth to a daughter who was named Margaret Banks Goodfellow. Thomas subsequently remarried and had a son, Goodfellow Junior, who was the Defendant in the classic case Banks v Goodfellow.

In September 1863, John Banks (then about 52 years old), was in a deteriorating state of health, and suffered from a series of epileptic fits. By this time he was living with his young niece, Margaret Banks Goodfellow in a village called Arkleby near Keswick. He summoned his solicitor Gorge Ansell to come from Keswick 20 miles away. When Ansell arrived on Dec 2, 1863, John Banks showed him the former will made in 1838 in favour of his sister, and said that since Margaret had died, he wished to bestow all his property to...
his niece Margaret Banks Goodfellow. Mr Ansell drafted the will, and had it signed on an interim basis, pending a proper engrossed copy to be prepared in his office in Keswick. On Monday December 28, 1863, John Banks received the proper engrossed copy of the will. He studied it carefully, was satisfied with it and had it signed. The will was testified (witnessed) by his Estate Agent who was handling his rental property for him.

A year and a half later, in July 1865, John Banks died. His death certificate cited epilepsy and insanity. Under the terms of his will, his niece Margaret Banks Goodfellow, who was then 18, inherited his entire estate.

Two years later, Margaret Banks Goodfellow died of tuberculosis. As she did not have a family, and her father Thomas Goodfellow and her step-mother had died, the fortune passed into the hands of her half-brother, Goodfellow Junior.

In the spring of 1869, John Banks Junior, (the Plaintiff in the case), the son of Jacob Banks, contested the validity of the last will on the grounds that his uncle was a certified lunatic and harboured paranoid and persecutory delusions. If John Banks’ last will had been nullified, the fortune would have passed to his half brother Jacob Banks, and subsequently to the Plaintiff.

The trial was conducted under Judge Brett. He directed the Jury that, the question they had to decide was, ‘whether in Dec 1863, when the will was executed (made), the testator was capable of having such a knowledge and appreciation of the facts, and was so far master of his intentions, free from delusions, as would enable him to have a will of his own in the disposition of his property, and act upon it.’ The Jury returned a verdict in favour of the Defendant, Mr Goodfellow Junior, saying that the will ‘was a good and valid will.’

John Banks Junior made an appeal on the grounds that Judge Brett misdirected the Jury by not telling them that his Uncle had harboured delusions which could have affected the soundness of his mind and therefore he was incapable of making a will.

The appeal was heard by four Judges headed by Chief Justice, Sir Alexander Cockburn (Figure 2) in 1870. The Court of Appeal held that Judge Brett’s direction to the Jury had been correct. It was immaterial whether the delusions remained latent or not at the time if the testator was otherwise competent to make a will, as the delusions had no influence upon him in disposing of his property. In his famous verdict, Cockburn proclaimed: ‘It is essential to the exercise of such a (testamentary) power that a testator shall understand the nature of the act and its effects, shall understand the extent of the property of which he is disposing; shall be able to comprehend and appreciate the claims to which he ought to give effect; and, with a view to the latter object, that no disorder of the mind shall poison his affections, pervert his sense of right, or prevent the exercise of his natural faculties— that no insane delusion shall influence his will in disposing of his property and bring about a disposal of it which, if the mind had been sound, would not have been made.’

Banks and Goodfellow is still cited and respected as a leading authority worldwide. The practice point for doctors from the study of this case is that a patient may still possess mental or testamentary capacity, even if he suffers from mental symptoms or illnesses, like schizophrenia, major depression or dementia, provided the mental faculties needed for analyzing and deliberating are intact.

References
Abstract

Systemic lupus erythematosus (SLE) is the prototype of systemic autoimmune disease. The clinical features are complex and the pathology and aetiologies are diverse; they include genetic, hormonal and environmental factors. This article will reflect on the latest changes in its classification criteria. Although the new criteria have not been tested for purpose of diagnosis, their simplicity of use will assist family physicians and specialists in identifying potential lupus patients early so they can be referred promptly for further evaluation.

Introduction

Diagnosing, assessing and managing SLE is a challenging task. The incidence and prevalence of SLE is increasing, potentially due to diagnosis of milder cases and improved survival. SLE affects women of child-bearing age, with a male-to-female ratio of about 9:1. Data from Asian countries shows that the prevalence of SLE is generally 30–50/100,000, and incidence rates have been reported to vary from 0.9–3.1/100,000 per annum. Common manifestations of SLE include mucocutaneous lesions (52–98%) and musculoskeletal/arthritis complaints (36–95%). Severe organ involvement such as renal disease occurs in 21–65% of Asian patients at diagnosis and 40–82% at follow up. The mortality risk of lupus patients has decreased substantially over past decades, the 10-year survival is currently 92%, which is significantly better than mortality rates reported 50 years ago. Major causes of death during the first 5 years of follow-up are disease activity and infections and the most common cause of mortality later in the disease course is thrombosis. The outcome of SLE patients depends on many factors, including genetic factors, economic factors, and the availability of medical care.

Revised classification criteria

Classification criteria are needed for SLE and other diseases for the purpose of consistent definition for research and surveillance. The most widely used classification criteria was developed by the America College of Rheumatology (ACR) and published in 1982. A major recent development in the field was the publication of the Systemic Lupus International Collaborating Clinics (SLICC) classification criteria of lupus in...
2012. The new classification attempted to rationalize the clinical criteria and provided an expansion on recognized laboratory abnormalities. The new criteria were derived from a set of over 700 expert-rated patient scenarios using complex methods.

Discussion
1. These new clinical criteria improve on the previous ACR classification criteria in several important ways. For example, malar rash and photosensitivity are included in the same criterion because they are largely overlapping. For optimal use of the criteria, some patients with suspected SLE will require a dermatologist’s assessment and sometimes a skin biopsy.
2. Arthritis criterion does not require a radiograph; some SLE-related arthritis is erosive.
3. The renal criterion now includes the “spot” urine-to-creatinine ratio without the requirement of a 24-hour urine collection.
4. The neurologic criterion includes more neurologic manifestations than were included in the original ACR definition of seizures or psychosis.
5. The haematological criteria have been split into 3 parts; the SLICC criteria require only one abnormal result.
6. Immunological criteria have incorporated new knowledge about serologic tests in SLE.
7. Low complement and direct Coomb’s (antiglobulin) test are included in the criteria. To avoid “double counting”, direct Coomb’s test is not counted if patient exhibits feature of haemolytic anaemia.
8. A final important aspect of the new SLICC classification criteria is that histologically confirmed lupus nephritis, in the presence of ANA or anti-dsDNA antibodies, is now sufficient for a classification of SLE.

Conclusion
The SLICC classification criteria perform better than the previous ACR criteria in terms of sensitivity (97% vs 83%; p<0.0001) but not specificity (84% vs 96%; p<0.0001). The new criteria are more clinically relevant, allowing inclusion of more patients with clinically defined lupus than are included using the previous ACR criteria. Use of the new criteria is important in clinical trials and in longitudinal observation studies.

It should be noted that both the old ACR criteria and the new SLICC criteria have not been tested for the purpose of diagnosis. However, the simplicity of use of the new criteria, that reflects current knowledge of SLE, may assist clinicians to identify potential lupus patients at an early stage. Prompt referral of patients to relevant specialists for evaluation and management can then be made.

A complete list of references can be downloaded from www.SOPHYSICIANSHK.org
Childhood Arthritis: A Review

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Key words:
JIA (幼年特發性關節炎),
Presentation (表現), Classification (分類)

Introduction

General practitioners and paediatricians often find it challenging to assess children with joint complaints. Indeed, arthritis is uncommon in the general paediatric population and often the symptoms children present with may be vague. Examining young children is not always easy; however, arthritis is one of the most common rheumatic problems in children. Early detection and referral are key steps in the successful management of these patients. In this article I will give an overview of childhood arthritis, including common causes, red flags and the examination techniques. I will also discuss juvenile idiopathic arthritis (JIA) and its classification.

Common symptoms in children with arthritis

Common symptoms when children have arthritis are: Pain, swelling, morning stiffness, loss of function.

Table 1. Select causes of arthritis in children

<table>
<thead>
<tr>
<th>Type</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Inflammatory</td>
<td></td>
</tr>
<tr>
<td>Idiopathic</td>
<td>JIA</td>
</tr>
</tbody>
</table>
| Secondary     | Henoch Schonlein purpura
Autoimmune conditions like systemic lupus erythematosus, juvenile dermatomyositis, various vasculitis, mixed connective tissue disease, overlap syndrome, scleroderma
Autoinflammatory syndromes |
| 2) Infection  | Pharyngitis (eg, group A streptococcus), viral infection (eg, parvovirus),
gastroenteritis (eg, salmonella, shigella, campylobacter), lyme disease |
| 3) Malignancy | Leukaemia, lymphoma, neuroblastoma                                         |
| 4) Haematological | Haemophilia, sickle cell disease                                           |

Pain

Typically the pain is dull aching and persistent, it can be located at the affected joint or at the tendon insertion point, in the case of inflammation of the enthesis (ie, enthesitis). For hip arthritis, the pain may be felt at the inner thigh while buttock pain signifies sacroiliac joint involvement. However, in children, pain is not usually an isolated symptom. Rather, it commonly presents together with other symptoms like joint swelling or impaired function. In some children, pain may not be prominent despite the presence of a florid synovitis.

Swelling

In children with arthritis, the affected joints could be swollen due to the synovial hypertrophy and effusion. One can compare this with the contralateral side for confirmation (Figure 1).

Morning stiffness and adapted function

Typically patients with arthritis have stiffness in the morning or after prolonged periods of rest. It is important to recognize that young children may not be able to verbalize this; instead, they may be grumpy in the morning, wanting to be carried or even present with developmental regression eg, not walking properly. They may stop using the affected limbs or develop adaptation eg, limping.

Causes of arthritis in children

Some causes of arthritis in children are listed in Table 1. It is of note that other non-inflammatory conditions can also give rise to musculoskeletal pain in children.

Red flag symptoms

Some children may have limb or joint pain due to other serious diseases.
The symptoms listed in Table 2 should alert clinician to the possibility of causes other than arthritis.

Paediatric childhood malignancies like leukaemia, lymphoma and neuroblastoma can present with bone pain rather than joint pain. These patients may be systemically unwell and have hepatosplenomegaly or lymphadenopathy. Jones et al reported that patients who presented with new onset bone pain and with no blasts in the peripheral blood smear, the presence of haematological abnormalities (cytopenia) and night-time pain is highly predictive of leukaemia as the cause for the new onset bone pain.3

In children with inflammatory arthritis, the pain is usually dull in nature. In contrast, in patients with infections like septic arthritis or osteomyelitis, the pain is extreme, often to the extent that the patient refuses to move at all, and the involved joint may appear red. Last but not least, clinicians should be vigilant for non-accidental injury as a possible cause for the musculoskeletal complaints in children.

**Paediatric musculoskeletal examination**

Similarly to adults, musculoskeletal examination of children includes inspection (gait, asymmetry in circumference, discrepancy in limb length, resting position, and contractures), palpation (effusion, tenderness and temperature) and range of movement (both active and passive). However, in children there are some unique challenges; they have different developmental stages and they may not always be co-operative, particularly if they have painful joints. There are several tips that I have found useful; first of all, one must have some knowledge of the normal developmental milestones for children. The description from parents and caretakers can help you to refine the search of the problematic joints. A lot of information can be gathered by careful observation before the actual physical examination. Remember to compare the concerned limbs or joints with the contralateral sides. Examination of the asymptomatic joints may sometimes detect arthritis. Paediatric gait, arms, leg, spine (pGALS; Table 3), is the child version of the adult GALS screening examination. It provides a good systematic approach for examining children.

**Investigation: Role of autoantibodies**

It is common for clinicians to order tests for antinuclear antibody (ANA), rheumatoid factor (RF) and anti-citrullinated antibody (anti-CCP) as they are helpful in classifying arthritis and have prognostic implications. However, they are not “diagnostic”; for example, the absence of antibodies does not exclude the diagnosis of inflammatory arthritis. Conversely, one should not make a diagnosis of arthritis in an ANA-positive patient with joint pain but no objective signs of arthritis.

ANA presents in 30–50% of JIA patients, and patients with oligoarticular JIA and positive ANA are at higher risk of developing uveitis. In patients with ANA and symptoms other than arthritis (eg, rash or abnormal urinalysis), clinicians should consider other autoimmune conditions eg, systemic lupus erythematosus or mixed connective tissue disease.
RF is reported in 2–12% of JIA patients and the clinical course of RF-positive polyarticular JIA is similar to that of rheumatoid arthritis. It is usually aggressive and the chance of remission is much lower.

Anti-CCP can sometimes be detected in JIA patients, often in RF-positive polyarticular JIA patients, but this can vary. JIA is the most common JIA subtype accounting for 50% of all JIA. It is more prevalent in girls and large joints are usually affected. ANA is positive in over half of patients, and young, female patients with ANA are at a higher risk of developing asymptomatic uveitis, which occurs in 20% of patients.

Juvenile idiopathic arthritis

JIA is the most common inflammatory arthritis in children, with a prevalence of 1 to 2 per 1000 children. By definition, one must have arthritis of unknown cause for more than 6 weeks and the symptoms must start at or before the age of 16. Previously, different nomenclature and definition for childhood arthritis was used; however, in 2000, the International League of Associations of Rheumatology (ILAR) published the consensus classification that group the inflammatory arthritis under the umbrella of JIA (Table 4). There are 7 subtypes: Oligoarticular arthritis (persistent or extended), RF-negative polyarticular arthritis, RF-positive polyarticular arthritis, enthesitis-related arthritis, psoriatic arthritis, undifferentiated arthritis and systemic arthritis.

Oligoarticular JIA

Patients with oligoarticular arthritis have, at most, 4 joints involved in the first 6 months. If the total number of affected joints remains ≤4, this is known as “persistent” oligoarticular JIA. If patients have more than 4 affected joints after 6 months, this is “extended.” Oligoarticular JIA is the most common JIA subtype accounting for 50% of all JIA.

Polyarticular JIA, rheumatoid factor positive

These patients have involvement of 5 or more joints in the first 6 months of illness and RF positivity 3 months apart.
Psoriatic arthritis (PsA)

This group of patients may have asymmetrical involvement of both large and small joints including the distal interphalangeal (DIP) joint. Patients may also develop dactylitis and there is usually a family history of psoriasis. In future, patients may develop axial involvement.

Systemic arthritis (SJIA)

SJIA is a distinct form with prominent “extra-articular” features, ie, systemic features. In order to meet the classification criteria, the patient must have fever for at least 2 weeks, arthritis and one of the following: Evanescent rash, serositis, lymphadenopathy or hepatosplenomegaly. The typical systemic JIA fever is described as intermittent, which means one spike of fever per day. The rash is salmon pink in colour and is more prominent during fever spike (Figure 3).

Conclusions

Clinicians should be aware of common symptoms of childhood arthritis, the possible red flags and the current classifications. Timely investigation and referral are important for early diagnosis and treatment.
Rheumatoid arthritis (RA) is a progressive disease characterized by chronic joint inflammation and subsequent structural damage. Over the past two decades, significant advances in basic science research have elucidated the biology of this inflammatory process, including the identification of cytokines that drive chronic synovial inflammation. This resulted in an explosion of targeted biologic therapies for RA that are significantly more effective than previously available treatments in improving disease activity, preventing joint destruction and preserving physical function. New biomarkers such as anti-citrullinated protein antibody (ACPA) are able to predict an aggressive disease course that often is accompanied by joint destruction. This discovery has further shown that there may be a “window of opportunity” in the early stage of RA where it may be possible to alter the course of disease if tightly controlled. This diminishes once inflammatory processes are more established.1 The international classification criteria, 1987 American College of Rheumatology (ACR), were derived from trying to differentiate established RA from other rheumatological diseases. Hence, they are not helpful in identifying patients at the stage where early effective intervention can be implemented.

In view of this, a joint working group of the ACR and The European League Against Rheumatism (EULAR) was formed to develop a new classification approach for RA which facilitates the study of patients in earlier stages of the disease. Indeed, the taskforce considered this to be the new proposed paradigm for the entity “RA” and not simply criteria for “early” RA. The approach is to be appropriately applied to patients with undifferentiated inflammatory synovitis, to identify the group who are at high risk of persistent and/or erosive disease. It should also serve as the basis for initiation of disease-modifying agents.

The working group devised a 3-phase program to achieve the goal. Phase 1 used a data-driven approach, with the goal of identifying clinical and laboratory parameters that were most predictive in deciding the initiation of disease modifying anti-rheumatic drug (DMARD) therapy in a population of patients with early undifferentiated synovitis. The analytical process, including univariate regression modeling, a subsequent principal components analysis and a multivariate regression model, aimed to identify the independent contribution of each variable chosen.2 A summary of the Phase 1 results are shown in Table 1. The purpose of Phase 2 was to obtain a consensus-based clinical judgment on the relative contribution of clinical and laboratory factors suggested to be essential in affecting the probability of developing “persistent inflammatory and/or erosive arthritis that is currently considered to be RA”.3 A summary of Phase 2 results and subsequent modifications are shown in Table 2. The aim of Phase 3 was to use the results of Phases 1 and 2 to develop a scoring system that would be applicable to newly presenting patients with undifferentiated inflammatory arthritis to allow identification of those with a high

### Table 1. Summary of Phase 1 results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Comparison</th>
<th>Relative weight†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swollen MCP joint</td>
<td>Present vs absent</td>
<td>1.5</td>
</tr>
<tr>
<td>Swollen PIP joint</td>
<td>Present vs absent</td>
<td>1.5</td>
</tr>
<tr>
<td>Swollen wrist</td>
<td>Present vs absent</td>
<td>1.6</td>
</tr>
<tr>
<td>Hand tenderness</td>
<td>Present vs absent</td>
<td>1.8</td>
</tr>
<tr>
<td>Acute-phase response</td>
<td>Low-level abnormal vs normal</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>Highly abnormal vs normal</td>
<td>1.7</td>
</tr>
<tr>
<td>Serology</td>
<td>Low-positive vs negative</td>
<td>2.2</td>
</tr>
<tr>
<td>(RF or ACPA)</td>
<td>High-positive vs negative</td>
<td>3.9</td>
</tr>
</tbody>
</table>

MCP, metacarpophalangeal; RF, rheumatoid factor; ACPA, anti-citrullinated protein antibody; PIP, proximal interphalangeal

† Derived from odds ratios from the multivariate regression model, and interpreted as the increase in the odds of having rheumatoid arthritis (RA) with as opposed to without the respective feature (e.g., weight of 1.5 for swelling of proximal interphalangeal (PIP) joints means that the odds of having RA is 1.5-fold in patients with as opposed to patients without swelling of a PIP joint).
chance of developing persistent and/or erosive RA. However, the working group noted that patients may present for the first time with later stages of the disease or may already be receiving treatment for RA. Hence, it is beneficial to have a single system of criteria that could be applied to all patients. This issue was also addressed by the panel during Phase 3.4,5

### Eligibility of the new criteria

The new classification criteria can be applied to any patient or otherwise healthy individual, when two mandatory requirements are fulfilled:

- a. There is evidence of currently active clinical synovitis (i.e., swelling) in at least one joint
- b. The criteria may be applied only to those patients in whom the observed synovitis is not better explained by another diagnosis

All joints of a full joint count may be assessed with the exception of distal interphalangeal (DIP) joints, the first metatarsophalangeal (MTP) joint and the first carpometacarpal (CMC) joint, as these joints are typically involved in osteoarthritis.

### Classification criteria

Four additional criteria can then be applied to eligible patients, as stated above, to identify those with “definite RA” shown in Table 3. A score of ≥6, out of a total score of 10, is indicative of the presence of definite RA. Figure 1 shows a tree algorithm which incorporates the weights of each domain and the cut point of 6 for the classification. To classify a patient with or without RA, a history of symptom duration, a detailed joint evaluation, and at least one serologic test (rheumatoid factor [RF] or ACPA) and one acute-phase response measure (erythrocyte sedimentation rate [ESR] or C-reactive protein [CRP]) must be obtained.

As the aim of the new criteria is to enable diagnosis and treatment earlier in the course of the disease, erosions were not considered for inclusion in the scoring system. Nevertheless, the working group noted that patients may present at later stages of disease. Thus, in addition to those who are newly presenting, three other groups of patients should be considered:

1. Those with erosions typical of RA were deemed to have prima facie evidence of RA
2. Those with longstanding disease, who, based on retrospective data, can be determined to have previously satisfied the classification criteria, can

### Table 2. Summary of Phase 2 results and subsequent modifications

<table>
<thead>
<tr>
<th>Joint involvement*</th>
<th>Exact (0–100)</th>
<th>Rescaled (0–10)</th>
<th>Rounded to 0.5 (0–10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 large</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>&gt;1–10 large, asymmetric</td>
<td>10.2</td>
<td>1.02</td>
<td>0</td>
</tr>
<tr>
<td>&gt;1–10 large, symmetric</td>
<td>16.1</td>
<td>1.61</td>
<td>1.5</td>
</tr>
<tr>
<td>1–3 small</td>
<td>21.2</td>
<td>2.12</td>
<td>2</td>
</tr>
<tr>
<td>4–10 small</td>
<td>28.8</td>
<td>2.88</td>
<td>3</td>
</tr>
<tr>
<td>&gt;10, including at least 1 small joint</td>
<td>50.8</td>
<td>5.08</td>
<td>5</td>
</tr>
</tbody>
</table>

### Serology†

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Negative RF and negative ACPA</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Low-positive RF or low-positive ACPA</td>
<td>22.0</td>
<td>2.20</td>
<td>2</td>
</tr>
<tr>
<td>High-positive RF or high-positive ACPA</td>
<td>33.9</td>
<td>3.39</td>
<td>3.5</td>
</tr>
</tbody>
</table>

### Acute-phase reactants‡

<p>| | | | |</p>
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<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal CRP and normal ESR</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Abnormal CRP or abnormal ESR</td>
<td>5.9</td>
<td>0.59</td>
<td>0.5</td>
</tr>
</tbody>
</table>

### Duration of symptoms§

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6 weeks</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>≥6 weeks</td>
<td>9.3</td>
<td>0.93</td>
<td>1</td>
</tr>
</tbody>
</table>

* Joint involvement refers to any swollen or tender joint on examination. Distal interphalangeal joints, first carpometacarpal joints, and first metatarsophalangeal joints are excluded from assessment. Categories of joint distribution are classified according to the location and number of the involved joints, with placement into the highest category possible based on the pattern of joint involvement. "Large joints" refers to shoulders, elbows, hips, knees, and ankles. "Small joints" refers to the metacarpophalangeal joints, proximal interphalangeal joints, second through fifth metatarsophalangeal joints, thumb interphalangeal joints, and wrists. "Symmetric" is defined as bilateral involvement of at least 1 region. In the category “>10 joints,” at least 1 of the involved joints must be a small joint; the other joints can include any combination of large and additional small joints, as well as other joints not specifically listed elsewhere (e.g., temporomandibular, acromioclavicular, sternoclavicular, etc.).

† Negative refers to IU values that are less than or equal to the upper limit of normal (ULN) for the laboratory and assay; low-positive refers to IU values that are higher than the ULN but ≤3 times the ULN for the laboratory and assay. Where rheumatoid factor (RF) information is only available as positive or negative, a positive result should be scored as low-positive for RF. ACPA = anti–citrullinated protein antibody.

‡ Normal/abnormal is determined by local laboratory standards. CRP = C-reactive protein; ESR = erythrocyte sedimentation rate.

§ Duration of symptoms refers to patient self-report of the duration of signs or symptoms of synovitis (e.g., pain, swelling, tenderness) of joints that are clinically involved at the time of assessment, regardless of treatment status.
Definition of an “involved” joint:

Any joint (except DIP joints, first MTP joint and first CMC joint) with swelling or tenderness on examination is indicative of active synovitis. Tenderness is included, particularly for the second through fifth MTP, in order to maximize the sensitivity. In addition, any joint with known recent injury that contributed to swelling or tenderness should be excluded.

Definition of small joints:

Small joints include the metacarpophalangeal (MCP), proximal interphalangeal (PIP), second to fifth MTP, and thumb interphalangeal (IP) joints, and the wrists.

Definition of large joints:

Large joints refer to the shoulders, elbows, hips, knees and ankles.

determination of the joint pattern:

Patients are categorized according to the location and number of involved joints, placing them into the category with the highest possible score. For the highest score category, i.e., ≥10 joints involved (including at least one small joint), additional joints that can be considered include temporomandibular joint, sternoclavicular joint, acromioclavicular joint, and others that may be expected to be involved in RA.

Table 3. The 2010 American College of Rheumatology/European League Against Rheumatism classification criteria for rheumatoid arthritis

<table>
<thead>
<tr>
<th>A. Joint involvement</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 large joint†</td>
<td>0</td>
</tr>
<tr>
<td>2–10 large joints</td>
<td>1</td>
</tr>
<tr>
<td>1–3 small joints (with or without involvement of large joints)§</td>
<td>2</td>
</tr>
<tr>
<td>4–10 small joints (with or without involvement of large joints)</td>
<td>3</td>
</tr>
<tr>
<td>&gt;10 joints (at least 1 small joint)**</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Serology (at least 1 test result is needed for classification)††</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative RF and negative ACPA</td>
</tr>
<tr>
<td>Low-positive RF or low-positive ACPA</td>
</tr>
<tr>
<td>High-positive RF or high-positive ACPA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C. Acute-phase reactants (at least 1 test result is needed for classification)‡‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal CRP and normal ESR</td>
</tr>
<tr>
<td>Abnormal CRP or abnormal ESR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D. Duration of symptoms§§</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6 weeks</td>
</tr>
<tr>
<td>≥6 weeks</td>
</tr>
</tbody>
</table>

* The criteria are aimed at classification of newly presenting patients. In addition, patients with erosive disease typical of rheumatoid arthritis (RA) with a history compatible with prior fulfillment of the 2010 criteria should be classified as having RA. Patients with longstanding disease, including those whose disease is inactive (with or without treatment) who, based on retrospectively available data, have previously fulfilled the 2010 criteria should be classified as having RA.
† Differential diagnoses vary among patients with different presentations, but may include conditions such as systemic lupus erythematosus, psoriatic arthritis, and gout. If it is unclear about the relevant differential diagnoses to consider, an expert rheumatologist should be consulted.
‡ Although patients with a score of 6/10 are not classifiable as having RA, their status can be reassessed and the criteria might be fulfilled cumulatively over time.
§ Joint involvement refers to any swollen or tender joint on examination, which may be confirmed by imaging evidence of synovitis. Distal interphalangeal joints, first carpometacarpal joints, and first metatarsophalangeal joints are excluded from assessment. Categories of joint distribution are classified according to the location and number of involved joints, with placement into the highest category possible based on the pattern of joint involvement.
¶ “Large joints” refers to shoulders, elbows, hips, knees, and ankles.
§ Small joints” refers to the metacarpophalangeal joints, proximal interphalangeal joints, second through fifth metatarsophalangeal joints, thumb interphalangeal joints, and wrists.
** In this category, at least 1 of the involved joints must be a small joint; the other joints can include any combination of large and additional small joints, as well as other joints not specifically listed elsewhere (e.g., temporomandibular, acromioclavicular, sternoclavicular, etc.).
†† Negative refers to IU values that are less than or equal to the upper limit of normal (ULN) for the laboratory and assay; low-positive refers to IU values that are between 0.3 and 3 times the ULN for the laboratory and assay; high-positive refers to IU values that are >3 times the ULN for the laboratory and assay. Where rheumatoid factor (RF) information is only available as positive or negative, a positive result should be scored as low-positive for RF. ACPA: anticitrullinated protein antibody.
‡‡ Normal/abnormal is determined by local laboratory standards. CRP C-reactive protein; ESR erythrocyte sedimentation rate.
§§ Duration of symptoms refers to patient self-report of the duration of signs or symptoms of synovitis (e.g., pain, swelling, tenderness) of joints that are clinically involved at the time of assessment, regardless of treatment status.

Similarly, patients with early disease who are being treated may not meet the new criteria at initial presentation, but may do so as their condition evolves over time.

Glossary of definitions

Definition of an “involved” joint:

Any joint (except DIP joints, first MTP joint and first CMC joint) with swelling or tenderness on examination is indicative of active synovitis. Tenderness is included, particularly for the second through fifth MTP, in order to maximize the sensitivity. In addition, any joint with known recent injury that contributed to swelling or tenderness should be excluded.

Definition of small joints:

Small joints include the metacarpophalangeal (MCP), proximal interphalangeal (PIP), second to fifth MTP, and thumb interphalangeal (IP) joints, and the wrists.

Definition of large joints:

Large joints refer to the shoulders, elbows, hips, knees and ankles.
Definition of the serologic categories:

ACPA and IgM-RF are usually reported in international units.

a. Negative = less than or equal to the upper limit of normal (ULN) for the laboratory test and assay;
b. Low-level positive = higher than the ULN but ≤3 times the ULN;
c. High-level positive ≥3 times the ULN

For a qualitative RF result, positive levels should be scored as “low-level positive.” When a value for the serologic test is not available or the normal range is not available, the results for that test should be considered “negative/normal.” Patients should be scored if information from at least one serologic test is available.

Definition of abnormal acute-phase response:

The acute-phase response measures, CRP or ESR, are scored as normal or abnormal based on local laboratory standards. If results of at least one of these tests are abnormal, the patient should be scored as having an abnormal response. If the value of the acute-phase reactant or information on the normal range is not available, the test should be considered “negative/normal”. For ESR, standard approach considering age and sex differences would be valuable.

Definition of duration of symptoms:

The “duration of symptoms” refers to the patient’s self-report of the maximum duration of synovitis (pain, swelling and tenderness) of any joint clinically involved at the time of assessment (ie, the day the criteria are applied).

Key differences between 1987 ACR criteria and 2010 ACR/EULAR criteria

In the 1987 ACR RA classification criteria, patients satisfying at least four of the seven criteria were considered as having RA. It places significant weight on the presence of arthritis involving hand joints, symmetrical joint involvement and presence of rheumatoid nodule, which may not be present in the early stage of disease. The radiographic changes, including bony erosion and periarticular osteopenia, are again not present among patients with early disease, who are most amenable to therapeutic intervention. For the laboratory criteria, only RF was included. Thus, those patients who have ACPA but no RF will not satisfy the classification criteria in making the diagnosis of RA. Multiple potential variables were considered and weighted during the formulation of the 2010 ACR/EULAR RA classification criteria. A more emphasis is placed on laboratory values, including serological biomarkers and acute-phase reactants. In contrast to the previous criteria, ACPA and RF are both included; the presence of either of these serological biomarkers in high titre contributes additionally to the scoring system. Elevated concentrations of acute-phase reactants are also included as a separate domain. The initial aim to create new RA classification criteria was to include patients with early disease who might benefit the most from early initiation of effective therapy to prevent structural damage. Hence, the 2010 ACR/EULAR RA classification criteria do not include evidence of structural damage in the criteria and expand the eligibility to patients with disease <6 weeks duration.

Clinical application of the new classification criteria

In clinical practice, the temptation to use classification criteria for diagnosis is irresistible. The taskforce that derived the 2010 criteria referred to this by stating that the new criteria will probably also be used as a diagnostic aid and that in order to assign the probability of developing RA, the range of scores between 0 and 10 can be used instead of the cut-off of 6 points.4,5 Classification criteria serve to enable communication and scientific research, they can be used as a tool to arrive at homogeneous groups of patients with comparable features. Diagnostic criteria are not intended to form groups of patients; diagnoses are made to help the individual patient and serve as a basis for treatment decisions. High positive predictive values and high likelihood ratios are preferable. In making a diagnosis, the value of a diagnostic test is highly dependent on the pretest probability, and thus, on the prevalence of the disease in the population. It has been shown that classification criteria perform poorly in populations with a low pretest probability of disease.6,7

The 2010 criteria for classification

The 2010 criteria aimed to classify patients earlier in the disease course. Three studies evaluated patients with early arthritis that were undifferentiated according to the 1987 ACR criteria at first presentation but fulfilled the 1987 criteria during the first 12–18 months. These retrospective evaluations revealed that the majority of these patients fulfilled the 2010 criteria at first presentation.8–10 This is highly relevant, as it indicates that the taskforce that derived the new criteria succeeded in their main objective.

The test characteristics of the 2010 criteria were observed in different validation studies.8–14 The majority of these studies compared the test characteristics with those of the 1987 criteria. A key issue is the outcome measure, as no gold standard exists for RA. Most studies excluded patients with other clear diagnoses and only evaluated patients with arthritis that was suspected to be undifferentiated or RA. In addition, the effect of therapy on the outcomes of arthritis persistency or fulfilling the 1987 criteria was mostly disregarded. With such heterogeneity of the studies, a formal meta-analysis could not be conducted. Using a simplified method of weighing the test characteristics in relation to the number of patients included, overall estimated sensitivity and specificity were 74% and 71%, respectively.15
Almost all studies consistently observed an increase in sensitivity of the 2010 criteria compared with 1987 criteria but a decrease in specificity. These data are compatible with studies reporting that up to 18% of the 2010 criteria-positive patients have diagnoses other than RA later on. Using the correct entry requirements (excluding other diagnoses before using the criteria) reduced the problem of false-positive classification. A difficulty is that there is no agreement as to what extent other diagnoses should be excluded before RA can be classified. To conclude, an increased sensitivity and earlier identification of RA can be obtained to a certain extent, at the cost of a precise classification.

The 2010 criteria for diagnosis

Clinical diagnosis is a highly individualized process. The data from the validation studies show reasonably positive predictive values, in the range of 80%, indicating that RA is likely to be present in patients fulfilling the 2010 criteria.8–14 Of note, the positive predictive values were derived from early arthritis cohort studies, in which the change of RA is relatively high. Thus, in settings such as general practitioner practices, the positive predictive value will be lower and subsequently, the use of 2010 criteria may lead to misdiagnoses more often.

The observed negative predictive values were variable, but overall not high.8–14 This implies that RA is not ruled out in patients who do not fulfil the 2010 criteria. Some of the patients who were negative for the 2010 criteria were already positive for 1987 criteria and almost 25% of the 2010 criteria-negative patients fulfil the 1987 criteria for RA later on. These findings indicate that 2010 criteria-negative patients with unclassified arthritis should be followed up carefully.

Data have demonstrated that 2010 RA patients have, on average, a lower number of tender and swollen joints than 1987 RA patients. Currently available data also indicate that 2010 RA is less erosive in nature and is more often self-limiting over time. Based on these results, if 2010 ACR/EULAR criteria positivity presents the new paradigm for the syndrome “RA,” the clinical picture of the disease has changed.

Conclusion

In this exciting era of advances in basic science and therapeutic development, together with the new criteria redefining RA, it is hoped that the disease may no longer be characterized by erosive joint problems and the persistence of symptoms may be realized.

References


A complete list of references can be downloaded from www.SOPHYSICIANSHK.org
Low back pain is a widespread disease worldwide with a lifetime prevalence varying from 11% to 84% globally,\(^1\) and 43–56% in Hong Kong.\(^2\) It affects both sexes equally, with peak onset at 30–40 years of age. In the Global Burden of Disease 2010 Study, low back pain ranked highest in terms of disability, and sixth in terms of overall burden.\(^3\) This translates to a reduced quality of life among patients, and necessitates better cross-disciplinary patient management to address this issue.

### Red flags of serious differential diagnosis for low back pain

Most cases of low back pain resolve spontaneously. However, clinicians should be alert with regards to clinical indicators or “red flags” that suggest the presence of systemic illness or imminent neurologic compromise — eg, cauda equina syndrome, fracture, malignancy and infection (Table 1). These conditions require immediate surgical attention or timely investigations.

Aside from the above stated conditions, up to 5% of patients with chronic low back pain in the primary care setting are eventually diagnosed as axial spondyloarthritis (SpA). These further emphasize the strategic significance of primary care physicians in managing low back pain.

### Spondyloarthritis: Modern nomenclature and diagnosis

Axial SpA is now the preferred nomenclature for a group of diseases characterized by inflammation of the sacroiliac (SI) joints and the spine.\(^5\) It embraces the traditional entities of ankylosing spondylitis (AS), arthritis associated with psoriasis, inflammatory bowel disease (IBD), reactive arthritis, and undifferentiated SpA (uSpA).

Diagnosing SpA is never an easy task. Patients presenting to primary care physicians with low back pain may lack pathognomonic clinical features to make the diagnosis.\(^6\) Even if patients have signs and symptoms typical of AS, historically (according to modified New York criteria\(^7\)), AS requires radiographic evidence of structural damage to SI joints for diagnosis. This often leads to an average of 8–11 years lapse between symptom onset and the development of radiographic evidence to confirm the diagnosis.\(^8,9\)

With emerging treatment options, establishing early diagnosis for timely and proper treatment is becoming increasingly important.

### Table 1. Red flags of low back pain

<table>
<thead>
<tr>
<th>Red flags</th>
<th>Cauda equina syndrome</th>
<th>Fracture</th>
<th>Malignancy</th>
<th>Infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &gt;70 years</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor trauma with age &gt;50 years</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant trauma</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Unexplained fever, weight loss</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Unrelenting night or rest pain</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Progressive neurological deficit with sphincter disturbance</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of osteoporosis</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic use of glucocorticoids</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immuno compromised state (drugs, disease, intravenous drug abuse etc)</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of improvement after 6 weeks’ conservative management</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adapted from Duffy\(^4\)
more prominent, and has become a major challenge for doctors recently. The expanded Assessment of SpondyloArthritis International Society (ASAS) classification criteria10,11 – encompassing both axial (with or without radiographic sacroiliitis, Table 2) and peripheral spondyloarthritis (Table 3) – have been a welcome advance in this regard. These classification criteria offer a sensitivity of 82.9% and a specificity of 84.4% for axial SpA, and sensitivity and specificity of 77.8% and 82.8%, respectively, for peripheral SpA.

### Early spondyloarthritis referral strategy in primary care setting

In order to expedite the diagnosis and management of SpA locally, the Hong Kong Society of Rheumatology mapped and published a simple and convenient referral strategy in 2013.12

---

**Table 2. ASAS axial spondyloarthritis criteria**

<table>
<thead>
<tr>
<th>In patients with ≥3 months back pain and age at onset &lt;45 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>sacroiliitis on imaging plus ≥1 SpA feature</td>
</tr>
<tr>
<td>SpA features</td>
</tr>
<tr>
<td>• inflammatory back pain (Table 4)</td>
</tr>
<tr>
<td>• arthritis</td>
</tr>
<tr>
<td>• enthesitis (heel)</td>
</tr>
<tr>
<td>• uveitis</td>
</tr>
<tr>
<td>• dactylitis</td>
</tr>
<tr>
<td>• psoriasis</td>
</tr>
<tr>
<td>• Crohn’s/colitis</td>
</tr>
<tr>
<td>• good response to NSAIDs</td>
</tr>
<tr>
<td>• family history (Table 5)</td>
</tr>
<tr>
<td>• HLA-B27</td>
</tr>
<tr>
<td>• elevated CRP</td>
</tr>
</tbody>
</table>

**Table 3. ASAS peripheral spondyloarthritis criteria**

<table>
<thead>
<tr>
<th>arthritis or enthesitis or dactylitis plus ≥1 SpA feature</th>
<th>OR</th>
<th>≥2 other SpA features</th>
</tr>
</thead>
<tbody>
<tr>
<td>• uveitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• psoriasis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Crohn’s/colitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• preceding infection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• HLA-B27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• sacroiliitis on imaging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• arthritis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• enthesitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• dactylitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• inflammatory back pain (ever)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• positive family history (Table 5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Figure 1. Clinical parameters for recommended referral to rheumatologists for low back pain

1. Chronic low back pain >3 months
2. First onset of symptom <45 years
3. Inflammatory back pain (4/5 of following):
   - Pain at night
   - Insidious onset
   - Age at onset <40 years
   - Improvement with exercise
   - No improvement with rest
4. HLA-B27+
5. Sacroiliitis

OR

Refer to rheumatologists for further evaluation

It is largely based on the suggested referral criteria by Sieper and Rudwaleit,\textsuperscript{13} with local data input regarding the source of referral for axial SpA. It is aimed at providing guidance for primary care physicians and non-rheumatology specialists to promptly screen for potential axial SpA patients.

The referral strategy is applicable for patients presenting with chronic low back pain (>3 months) with first onset before 45 years of age. It encourages early referral to rheumatologists if patients present with at least one of the three clinical parameters (inflammatory back pain (IBP), HLA-B27 positive, or sacroiliitis; Figure 1). Physicians can adopt any one of the clinical parameters based on convenience, cost and availability in their clinical setting.

The proposed referral strategy adopted by the society has been tested in multiple studies across different countries. Fulfillment of any one of the suggested referral criteria led to a final diagnosis of axial SpA in 34% of patients; while fulfilling two or more criteria gave a final diagnosis rate of 62%.\textsuperscript{14} The MASTER study\textsuperscript{15} also demonstrated that, more complicated criteria did not lead to a significantly higher diagnosis rate. These evidence support the use of a simple and convenient referral strategy in primary care setting.

Among the three clinical parameters, identifying IBP symptoms should be the priority and parameter of choice – the only prerequisite is physicians’ awareness on the nature of the back pain. Presence of IBP symptoms (Table 4) yields a sensitivity of 75% and a specificity of 76% for diagnosing axial SpA. Subsequently, 1 in 5 patients with proven IBP symptoms was diagnosed of axial SpA.

### Table 4. Definition of inflammatory back pain

4 of 5 of the following parameters present:
- Age at onset <40 years
- Insidious onset
- Improvement with exercise
- No improvement with rest
- Pain at night (with improvement upon getting up)

### Table 5. Family history for SpA

Presence in first-degree or second-degree relatives of any of the following:
- Ankylosing spondylitis
- Psoriasis
- Uveitis
- Reactive arthritis
- Inflammatory bowel disease

Conclusion

Low back pain is a prevalent problem hampering patients’ quality of life. Although most cases are self-limiting in nature, some require further specialist care. The Hong Kong Society of Rheumatology back pain referral guideline is easy to apply with good sensitivity, specificity and diagnostic value for axial SpA. With careful implementation, patients can gain adequate control over the disease in a timely manner.

References

A complete list of references can be downloaded from www.SOPHYSICIANSHK.org
Comprehensive Sourcing for Healthcare Professionals

The sixth edition of HKTDC Hong Kong International Medical Devices and Supplies Fair will run from 18-20 May 2015 at the Hong Kong Convention and Exhibition Centre. The event is expected to attract about 240 exhibitors to promote medical products as well as related services, giving buyers the perfect opportunity to source a broad range of healthcare equipment, products and services from reputable suppliers.

In 2014, the fair achieved an exciting record of more than 9,600 buyers from 54 countries and regions, up 17% over the last edition.

Major Theme Zones

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Physiotherapy Zone was introduced at the 2014 fair. It returns to cater to a growing demand for physiotherapy-related equipment.

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Email: hkmmedical.visitor@hktdc.org
References:

References:


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References:

References: