

# **Patients at the heart:**

**Taiwan's journey to patient-centred  
care for Immune-Mediated  
Inflammatory Diseases**



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# About this report

*"Patients at the heart: Taiwan's journey to patient-centred care for Immune-Mediated Inflammatory Diseases"* is an Economist Impact report sponsored by Takeda.

The report provides an independent analysis of care pathways for Immune-Mediated Inflammatory Diseases (IMIDs) in Taiwan, focusing on Inflammatory Bowel Diseases (IBDs), psoriatic diseases and rheumatoid arthritis (RA), and identifies opportunities for enhancing patient-centred care. It further highlights both regional and global best practices to improve patient-centred care for IMIDs in Taiwan. Finally, it identifies opportunities for the development of a comprehensive and integrated care pathway for patients with IMIDs.

The findings in this report are based on an extensive literature review and in-depth interviews with relevant clinical experts, patient advocates and policy stakeholders from Taiwan and globally. The editorial team at Economist Impact would like to thank the following individuals (listed alphabetically) for generously contributing their time and insights:

- **Johan Burisch**, Consultant, Gastrounit, Medical Division, Hvidovre Hospital, Denmark
- **Wei-Han Chen**, Secretary General, Taiwan Alliance of Patients' Organizations (TAPO)
- **Yun-Chen Tsai**, Rheumatologist, Division of Rheumatology, Allergy and Immunology, Chang Gung Memorial Hospital, Taiwan
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The Economist Impact bears sole responsibility for the contents of this report. This research was led by Neeladri Verma with guidance from Michael Guterbock. The report was written by Radha Raghupathy, with support from Neeladri Verma. The report was edited by Maria Ronald and Neeladri Verma. The research team included Aanisah Khanzada, Radha Raghupathy and Xin Peng. The findings and views expressed in the report do not necessarily reflect the views of the sponsor.

# Executive summary

Immune-Mediated Inflammatory Diseases (IMIDs) are a group of heterogeneous disorders affecting 3-7% of the global population and causing significant disabilities.<sup>1</sup> Having one IMID increases the risk of having another, and concurrent systemic comorbidities including cardiovascular, cerebrovascular and psychiatric disorders are common.<sup>2,3,4</sup> Due to this complexity, the conventional single-specialty care model doesn't effectively meet the diverse needs of IMID patients.

Taiwan, like many nations, struggles with these complexities in IMID care. This paper delves into the care pathways for three prominent IMIDs in the country: Inflammatory Bowel Diseases (IBDs), including Crohn's disease (CD) and ulcerative colitis (UC), which primarily affect the gastrointestinal tract causing abdominal pain and diarrhoea; psoriatic diseases, including psoriasis (PsO) that predominantly impact skin and psoriatic arthritis (PsA) that impacts joints; and rheumatoid arthritis (RA) that primarily involves joints.<sup>5,6,7</sup> We explore the care gaps and identify the opportunities available to improve patient-centred, multidisciplinary care for these diseases in Taiwan.

To enhance patient-centred care, good knowledge of the disease burden and gaps in existing care is essential.

## What are the knowns and unknowns regarding the burden of IMIDs in Taiwan?

The burden of IMIDs in Taiwan is increasing. Taiwan showed the greatest increase in age-standardised incidence rate of IBD between 1990 and 2019 among all countries in the latest Global Burden of Diseases study.<sup>8</sup> However, estimates of the economic burden of these diseases are dated, and there is a dearth of literature on indirect costs, especially relating to workplace productivity, including presenteeism and absenteeism.

## How does active disease in IMIDs impact the quality of life?

IBD, RA and psoriatic diseases are characterised by physical disability that significantly impairs health-related quality of life (HRQoL).<sup>9</sup> In addition, patients report significant psychological distress, with their conditions negatively impacting various aspects of life including work, relationships, daily activities and overall sense of control, often leading to feelings of frustration and exhaustion.<sup>10</sup> Stigmatisation is common for psoriatic diseases with visible skin lesions.<sup>11</sup> Good clinical response to treatment is associated with better HRQoL.<sup>12</sup>

### **What are the gaps in patient-centred care for IMIDs in Taiwan?**

To create a more patient-centred care pathway for IMIDs, which addresses the complex needs of patients, Taiwan will need to address some of its current gaps.

#### **Delayed diagnosis is common and seeking specialist care can be a challenge.**

Experts attest to significant delays in diagnosis of IMIDs in Taiwan due to the lack of awareness among both patients and general practitioners (GPs), the care-seeking behaviour of patients such as taking over-the-counter (OTC) medications till symptoms become very severe, the lack of sub-specialists focused on IMIDs, and regional disparities in access to specialists. They note that patients with IBD wait three months to a year before a diagnosis is made, while those with RA wait an average of five months. Data on diagnostic delays for psoriatic diseases in Taiwan are lacking.

#### **Mental health support is lacking.**

There is an increased incidence of anxiety, depression and schizophrenia in patients with the three IMIDs studied here.<sup>13,14</sup> Patients with PsO, for example, have a two-fold increase in risk of suicidal ideation as compared to those without.<sup>15</sup> Despite this, the mental health of these patients is not prioritised in Taiwan. For example, guidelines for the management of PsO in Taiwan do not include recommendations on screening for, and management of, mental health issues.<sup>16</sup> There is a particular lack of access to mental healthcare in rural areas. While there has been a move to increase community-based care for mental health disorders, more needs to be done to streamline these services and improve accessibility.<sup>17</sup>

#### **Guidelines and reimbursement are not aligned with the treat-to-target approach for care.**

With the advent of various novel therapies, the goal of treatment in IMIDs across the world has moved from mere symptom control to achieving deeper remissions and better outcomes.<sup>2</sup> This approach, known as treat-to-target (T2T), relies on the use of validated instruments to monitor disease activity frequently and adjust the treatment approach accordingly to achieve a pre-specified target of low disease activity or complete remission.<sup>18</sup> However, to achieve these treatment endpoints, access to relevant tests and treatments is essential. Taiwan's guidelines currently do not recommend endoscopy, for instance, to assess response of treatment in IBD care, so there is routine lack of knowledge on whether the treatment target of mucosal healing was achieved.<sup>19,20</sup> Reimbursement for biologics is available only after conventional therapy has been shown to be ineffective, and is only provided for a fixed term. While in RA and psoriatic disorders, continuation of treatment is contingent on disease activity, in IBD, regardless of disease activity, reimbursement of biologics is only provided for one year.<sup>21,22,23</sup>

Shifting focus towards multidisciplinary, patient-centred care is key to better disease control, better quality of life and

enhanced productivity of patients with IMIDs in Taiwan. Towards this goal, we have identified the following four calls to action:



**Address inefficiencies in the care pathway:** Efforts are being made by patient organisations and professional bodies to increase awareness of IMIDs in Taiwan. Given the paucity of sub-specialists and regional disparities in their distribution, better access to tests, such as the faecal calprotectin (FC) test, could help screen select individuals with symptoms suggestive of IBD and avoid referrals for endoscopy in those with a negative test.<sup>24</sup> The development of e-health solutions based on best-practice examples such as the Constant Care model for IBD in Denmark could help with remote monitoring of patients and timely intervention for disease flares.<sup>25</sup> Greater focus on multidisciplinary care, both from a guidelines and implementation perspective, is necessary. Support for mental health, rehabilitation, sexual and reproductive concerns should be prioritised.



**Develop integrated and cross-cutting solutions for IMIDs:** Given the overlapping symptomatology, comorbidities and management options for IMIDs, development of cross-cutting solutions for multidisciplinary care across the different diseases can improve care delivery and patient outcomes. Training and employment of specialist nurses with expertise across various IMIDs can help reduce fragmentation of care and improve “patient-centricity”. Successful models of multidisciplinary specialist clinics for IBD in Korea can be used to inspire similar developments in Taiwan.<sup>26</sup> Experts recommend adaptation of these clinics to local contexts rather than direct cloning; for instance, one could include sequential clinic visits for patients on the same day as opposed to combined visits with multiple specialists.



**Adopt a multi-pronged approach to achieve T2T:** Despite the advent of multiple new therapies, real-world evidence suggests that 30-70% of patients with IMIDs do not achieve deep responses/remission.<sup>22</sup> Work is being done using artificial intelligence (AI) models to improve the predictability of treatment responses and thereby to choose the optimal therapy upfront to avoid cycling of multiple therapies due to inadequate response.<sup>27,28</sup> Greater awareness among physicians, better guidelines and improved reimbursement is needed for optimising the use of existing agents. Continued investments should be made in developing new therapies with better response rates.



**Transition to a value-based model of care to fulfil unmet needs of patients:**

The successful development of patient-centred care models requires a better understanding of, and reflection into, the unmet needs of patients. Collection of Patient-Reported Outcome Measures (PROMs) and incorporating them into the patients' electronic health record would enable better management of patients' needs and thereby lead to improved health outcomes. The efforts by Erasmus MC in Rotterdam in developing such a framework could be used as an example to guide efforts in Taiwan.<sup>29</sup> Engaging patients in co-creating care models could greatly improve the patient-centricity of care.<sup>30</sup>

# Introduction

Immune-Mediated Inflammatory Diseases (IMIDs) encompass multiple disorders that affect various systems in the human body, and are collectively underpinned by a dysfunctional immune response causing chronic inflammation.<sup>31</sup> About 3-7% of the world's population is affected by IMIDs and the presence of one IMID increases the risk of others.<sup>1,2</sup> Patients with IMIDs are also at risk of cardiovascular, cerebrovascular and psychiatric comorbidities.<sup>3,4,13</sup> The high morbidity and disability caused by IMIDs result in significant negative impact on health-related quality of life (HRQoL), and places a huge burden on patients, their families and health systems.<sup>9,32</sup> The conventional monodisciplinary siloed approach, where each medical specialty works separately, often lacks "patient-centricity" and can lead to fragmented care delivery. A patient-centred, multidisciplinary model of care with shared decision-making and patient empowerment is key to improving care delivery and health outcomes for patients with this group of diseases.<sup>33</sup>

This paper is focused on evaluating the current care model in Taiwan for three of the six major IMIDs, namely Inflammatory Bowel Diseases (IBDs), including Crohn's disease (CD) and ulcerative colitis (UC), psoriatic diseases, including psoriasis (PsO) and psoriatic arthritis (PsA), and rheumatoid arthritis (RA).<sup>8</sup> IBD is characterised by relapsing, remitting inflammation of the gastrointestinal (GI) tract, which presents with abdominal pain, diarrhoea and vomiting, extra intestinal manifestations (EIM) and a risk of progression to cancers.<sup>5</sup> PsO mainly affects the skin causing plaques or pustules. PsA can co-occur in up to 30% of individuals with PsO, and about 5% of patients with PsA can develop severe mutilating disease.<sup>6,34</sup> RA primarily affects the joints; untreated inflammation due to RA can cause irreversible joint damage. Systemic manifestations in RA can affect the skin, muscles, lungs, blood vessels and blood cells.<sup>7</sup>

Through a detailed literature review and deep engagement with clinical and policy experts, we identify the gaps in patient-centred, multidisciplinary care for these diseases in Taiwan and provide evidence-based recommendations to improve the IMID care pathway.

# What are the knowns and unknowns regarding the burden of IMIDs in Taiwan?

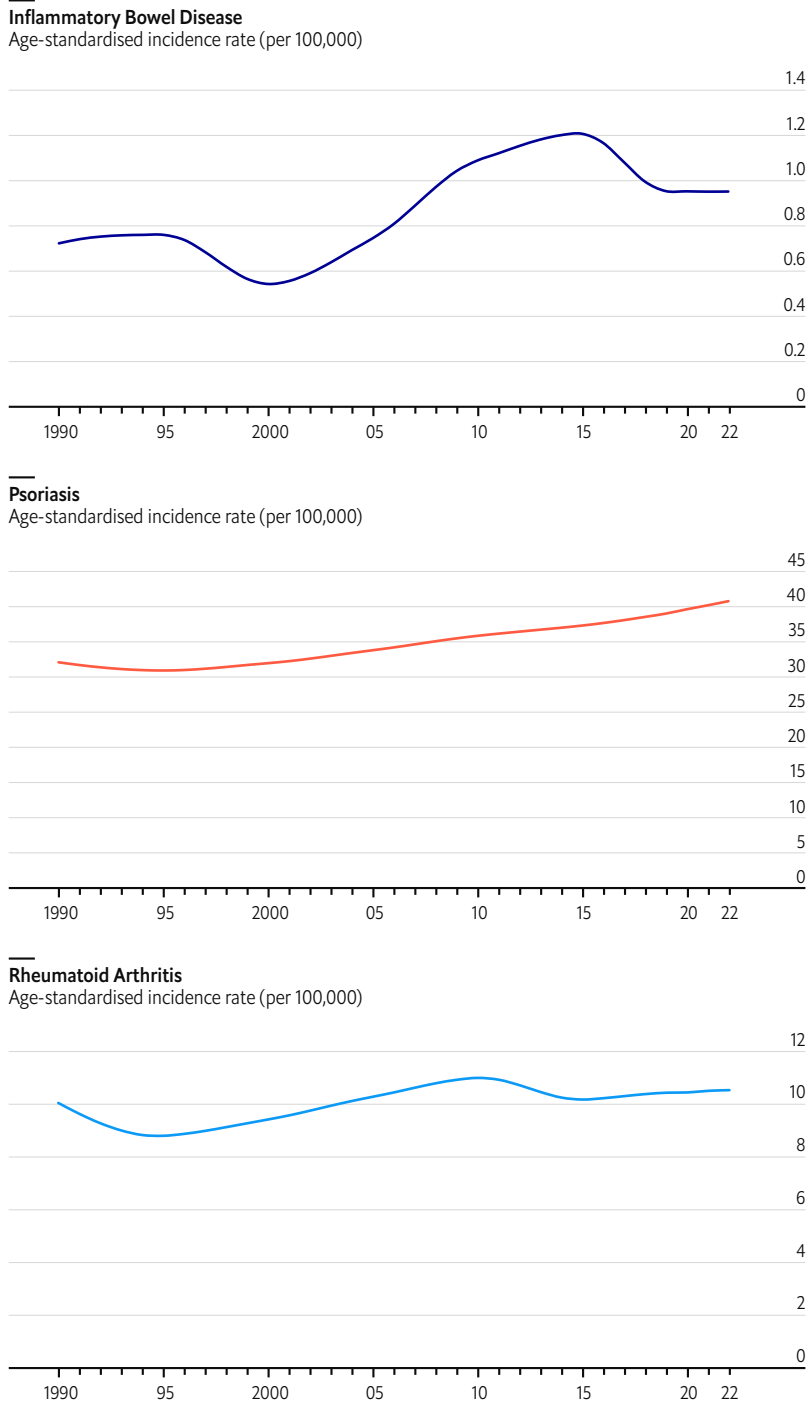
The 2019 Global Burden of Disease (GBD) study showed that IBD, PsO and RA accounted for 0.6%, 6.84% and 1.59% of all new IMID cases (incidence) in the world, respectively.<sup>8</sup> The crude incidence of these diseases has been rising due to increasing population size, changing lifestyle, increased environmental risk factors, and improved diagnostic rates due to greater awareness. The global age-standardised incidence rate (ASIR) showed an increasing trend between 1990 and 2019 (average annual percentage change (AAPC): +0.21); projections

suggest that the ASIR of RA will continue to increase until 2040.<sup>7</sup> On the other hand, ASIR of PsO (AAPC: -0.77) and IBD (AAPC: -0.32) showed a decreasing trend. In Taiwan, these trends were reversed – the ASIR of PsO increased and that of RA remained relatively stable between 1990 and 2022 (see Figure 1).<sup>35</sup> The 2019 GBD study also found that Taiwan had the fastest rising trend in the ASIR of IBD among all the countries studied (AAPC: +3.2; 95% CI 2.68-3.73) between 1990 and 2019.<sup>8</sup>





**Figure 1: Age-standardised incidence rate for select IMIDs in Taiwan (1990-2022)**

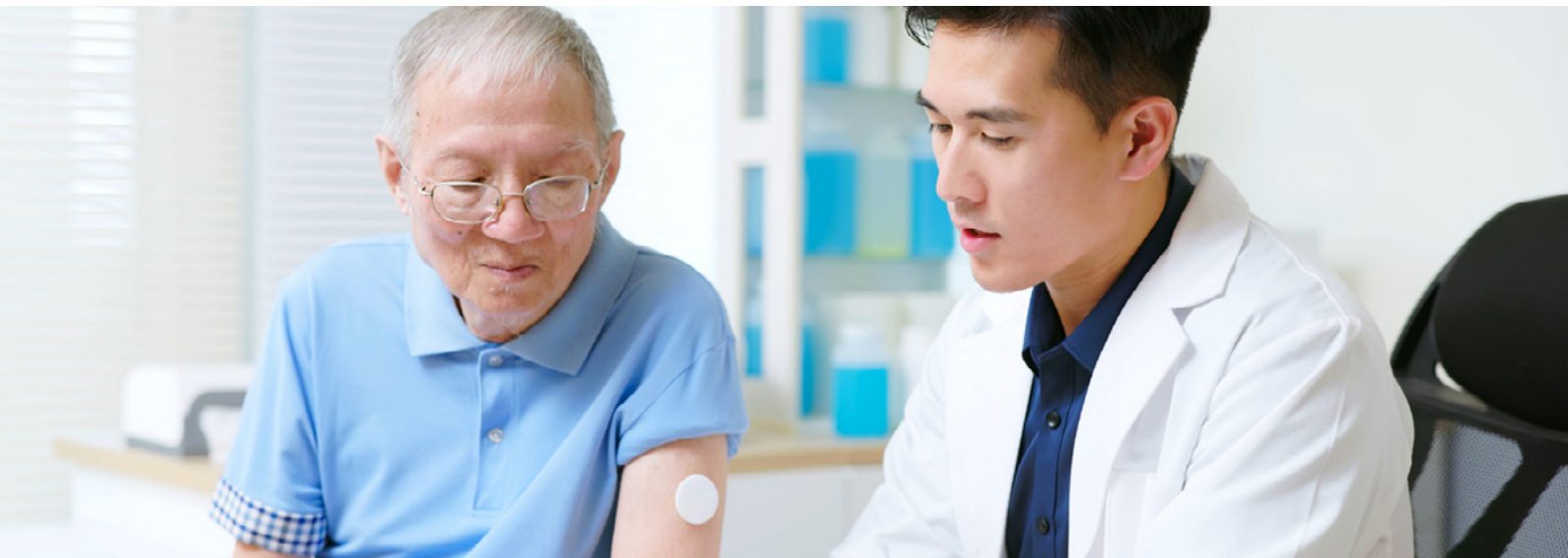


These trends are particularly concerning because the total number of cases (prevalence) of IMIDs is highest in the economically productive age-group. IBD incidence peaks in adults aged 20-59 years, RA in adults aged 30-69 years, and PsO in people under 69 years of age.<sup>8</sup> “The economic impact of these diseases [IMIDs] is significant, especially for younger people who do not receive proper treatment and have reduced productivity. However, we don’t have enough data to quantify this impact yet in Taiwan,” according to Hsu-Heng Yen, Gastroenterologist at Changhua Christian Hospital, Taiwan.

**“The economic impact of these diseases [IMIDs] is significant, especially for younger people who do not receive proper treatment and have reduced productivity. However, we don’t have enough data to quantify this impact yet in Taiwan.”**

Hsu-Heng Yen, Gastroenterologist at Changhua Christian Hospital, Taiwan

Source: Institute for Health Metrics Evaluation. Used with permission. All rights reserved.<sup>35</sup>



**Table 1: Average lifetime costs of select IMIDs reported in Taiwan<sup>39,40</sup>**

IMID	Years of study	Number of patients included	Average lifetime direct cost per patient
Rheumatoid Arthritis	2003 and 2016	29,352 patients	<ul style="list-style-type: none"> <li>• US\$72,953</li> <li>• Costs were higher for women (US\$73,112) than men (US\$63,557) and increased with increasing age<sup>37</sup></li> </ul>
Psoriatic diseases	2000 and 2017	217,924 patients	<ul style="list-style-type: none"> <li>• US\$79,205 for those with moderate-to-severe PsO</li> <li>• US\$54,716 for those with PsA</li> <li>• Costs were higher for men (US\$79,621) than women (US\$71,908) and increased with increasing age<sup>38</sup></li> </ul>

Estimates of direct costs of these diseases from Taiwan are outdated. Data for IBD is from the pre-biologic era, while data for RA and psoriatic diseases extends into the biologic era but is still 7-8 years old.<sup>36</sup> (see Table 1; IBD costs not shown). The breakdown of direct costs for these diseases is unclear, and the impact of novel therapies on these costs is not well described. Wei-Han Chen, Secretary General of the Taiwan Alliance of Patients’ Organizations (TAPO), further explains “We believe that the timing for accessing advanced treatment [for IBD] is relatively late. In practice, doctors might suggest that patients pay out-of-pocket to seize the golden treatment period. However, most patients cannot afford the high medication costs. When the disease becomes excessively severe, it leads to inevitable surgery, which incurs extra medical expenses. This could be a burden on the entire healthcare system or structure.”

With regard to indirect costs, the only data we could identify was a Taiwanese study between 2009 and 2010 that interviewed 480 adults with PsO. The annual out of pocket (OOP) payments by patients were estimated at

US\$403 (NT\$13,095) for moderate-to-severe PsO and at US\$222 (NT\$7,237) for mild PsO. Loss of productivity for patients and caregivers was estimated at an annual cost of US\$190 (NT\$6,203) for moderate-to-severe PsO and US\$85 (NT\$2,750) for mild PsO. This metric was measured by multiplying the additional number of outpatient visits or admissions (absenteeism) due to PsO by the regression predicted income losses due to sick leave taken by patients or caregivers.<sup>37</sup> These figures contrast with international data that account for both presenteeism and absenteeism. A study in 2015 including the EU5 (France, Germany, Italy, Spain, and the United Kingdom) and USA estimated the mean annual work productivity losses due to PsO to be much higher and range between US\$3,742 in Spain to US\$ 9,591 in the USA. Presenteeism contributed over 85% of the work productivity losses in all countries except Germany, where it accounted for 65% of costs.<sup>38</sup> Better data on the indirect costs of IMIDs and the impact of effective therapies on workplace productivity and overall costs is critical to understand the overall benefits of treatment.

# How does active disease in IMIDs impact the quality of life?

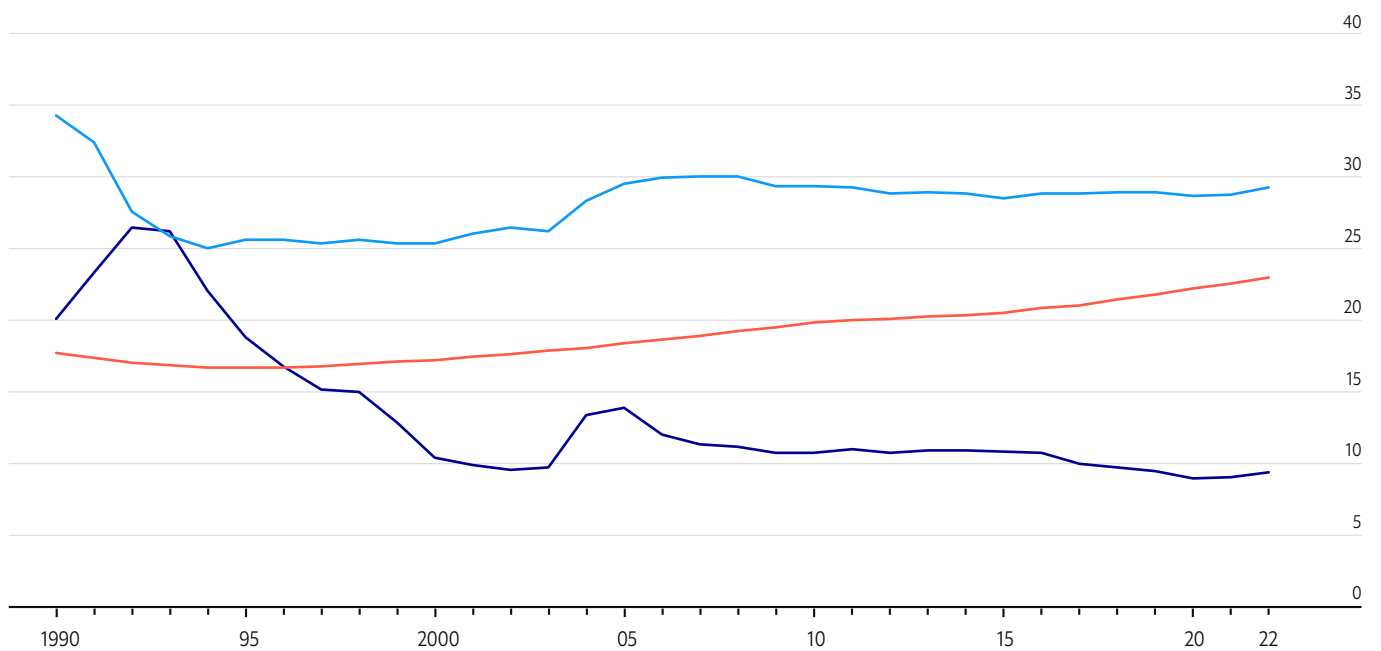
In Taiwan, the burden of IMIDs has evolved over time, as indicated by the trends in the Disability-Adjusted Life Years (DALYs) (see Figure 2). From 1990-2022, DALYs for IBD and RA decreased, suggesting that the introduction of advanced therapies and newer treatment approaches

has led to improved outcomes. With optimal use, these trends could continue to improve.<sup>35</sup> However, the situation for PsO is different, with rising DALYs indicating an increasing impact on sufferers’ well-being.<sup>35</sup>

**Figure 2: Age-standardised Disability-Adjusted Life Years (DALYs) for select IMIDs in Taiwan (1990-2022)**

Age-standardised DALYs rate (per 100,000)

— Inflammatory Bowel Disease — Psoriasis — Rheumatoid Arthritis



Source: Institute for Health Metrics Evaluation. Used with permission. All rights reserved.<sup>35</sup>

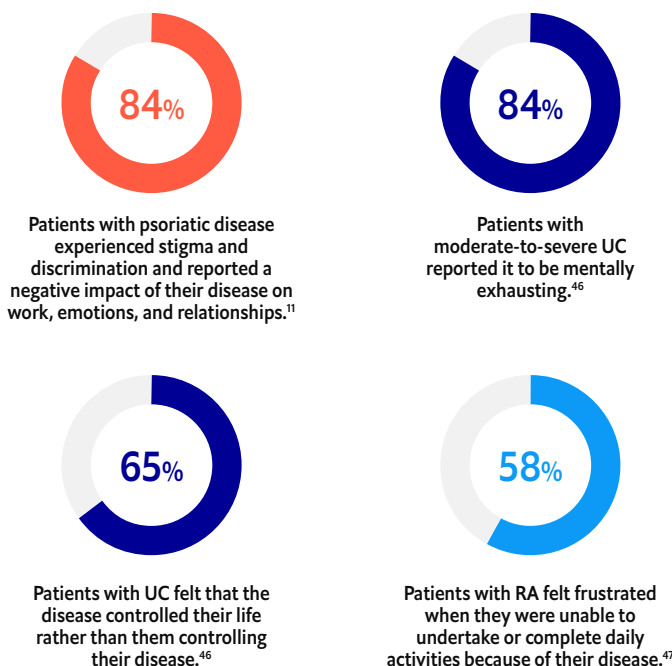
**“If patients with IBD enter remission with treatment, they can enjoy a similar quality of life as those without the disease. However, once they have a flare, their ability to work and attend social activities is significantly impaired,”**

Johan Burisch, Consultant in the Gastrounit, at Hvidovre Hospital’s Medical Division in Denmark

Despite these overall trends, the impact of IMIDs on patients’ quality of life remains significant. Factors such as disease activity, comorbidities and treatment side effects are major contributors to the disability and impaired HRQoL seen in IMID patients. Across all three conditions - IBD, PsO, and RA - patients with active disease have a poorer HRQoL than those in remission.<sup>41,42,43</sup> “If patients with IBD enter remission with treatment, they can enjoy a similar quality of life as those without the disease. However, once they have a flare, their ability to work and attend social activities is significantly impaired,” says Johan Burisch, Consultant in the Gastrounit, at Hvidovre Hospital’s Medical Division in Denmark.

While all IMIDs impact HRQoL, the rising DALYs for PsO warrant a closer look at its specific effects. A cross-sectional study from Taiwan on patients with PsO revealed that while disease severity and duration do not directly correlate with HRQoL, symptoms like itching, burning, nail involvement, and arthritis are associated with a substantial decline in quality of life. The study also found that women reported a poorer HRQoL, underscoring the necessity for more effective symptom management and gender-sensitive care.<sup>44</sup> Furthermore, involvement of exposed areas such as hands and face in PsO patients has greater effects on HRQoL, impacting occupational function, interactions with co-workers, and causing fears of being fired and financial concerns.<sup>10</sup> Stigmatisation due to disfigurement is another cause of poor quality of life and self-isolation in patients with PsO.<sup>45</sup>

**Figure 3: Global survey findings on the impact of select IMIDs on patients<sup>11,46,47</sup>**



Beyond these physical and social impacts, IMIDs can also significantly affect patients’ mental wellbeing (see Figure 3).

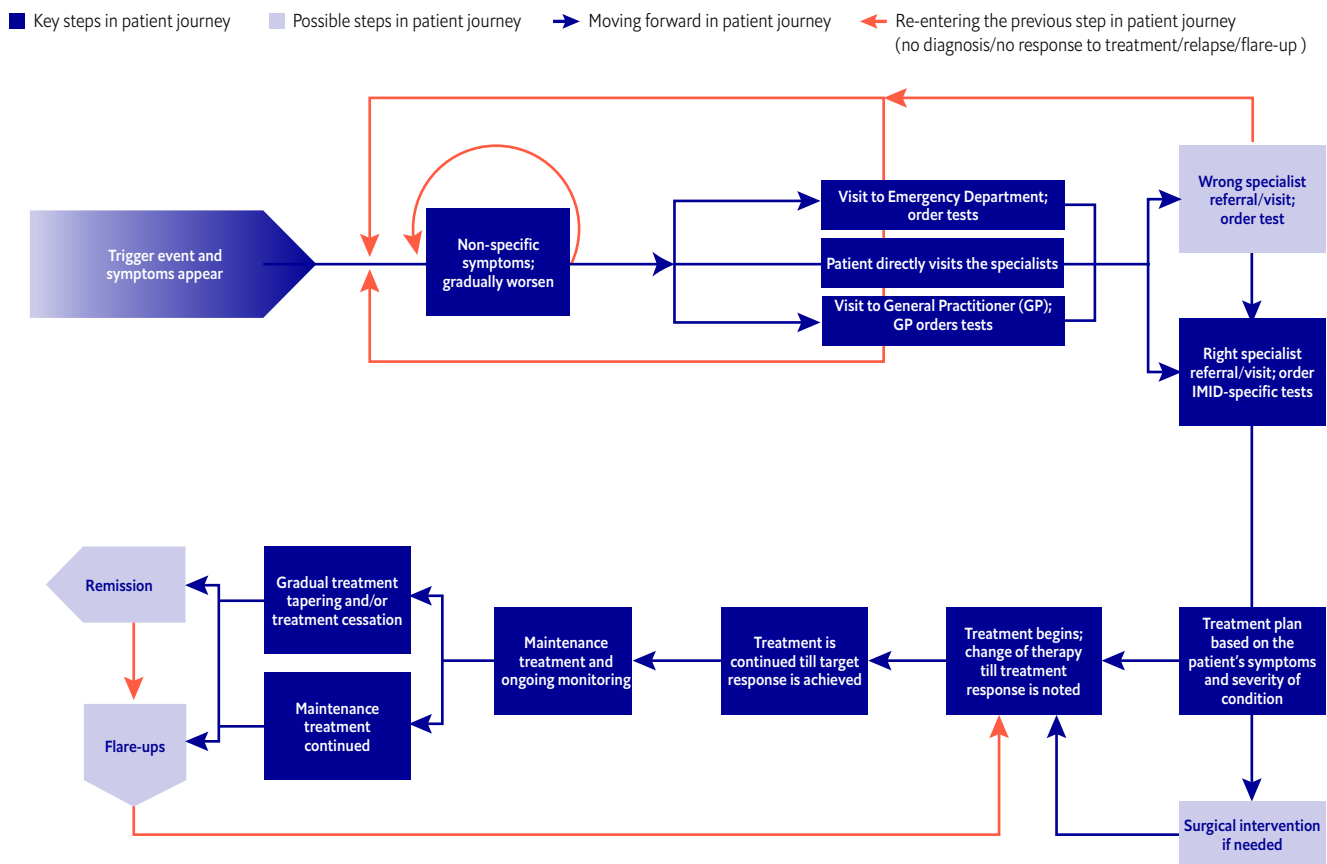
Good clinical response to treatment with novel agents, including biologics and small molecules, is associated with better HRQoL.<sup>12,48</sup> A study from Taiwan on 100 patients with RA receiving an anti-Tumour necrosis factor-alpha (TNF-α) biologic showed clinically meaningful improvement in physical functioning as compared to the baseline in 60.4% and 59.6% of patients at 12 and 24 weeks of observation, respectively. In addition, HRQoL and work performance scores significantly improved at 24 weeks as compared to the baseline.<sup>49</sup>

# How can the care pathways for IMIDs be streamlined to improve patient-centricity?

A typical journey through the healthcare system for patients with IMIDs is shown in Figure 4. In this section, we highlight barriers in the

provision of patient-centred care in Taiwan across various points in this pathway and identify opportunities for improvement.

**Figure 4: Steps in patient journey for IMIDs**



Source: Economist Impact with expert input

### **Improve awareness, expedite referrals and diagnosis of IMIDs**

Delayed care-seeking behaviour by patients, lack of awareness among general practitioners (GPs) and bottlenecks in referral pathways collectively contribute to delayed diagnosis of IMIDs.<sup>50,51,52</sup> Yun-Chen Tsai, Rheumatologist, Division of Rheumatology, Allergy and Immunology at, Chang Gung Memorial Hospital, Taiwan, highlights that “The loop in the patient

journey between onset of symptoms and seeing a rheumatologist is most problematic. At the onset, patients think that their symptoms are not too severe and take over-the-counter (OTC) medicines for joint pain. Eventually, as the severity increases, they visit various specialists like orthopaedics, rehabilitation and internal medicine, receiving more medications that transiently improve symptoms. So, referrals to rheumatologists are delayed.”

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Figure 5: Diagnostic delays seen in IMIDs<sup>53,54</sup>

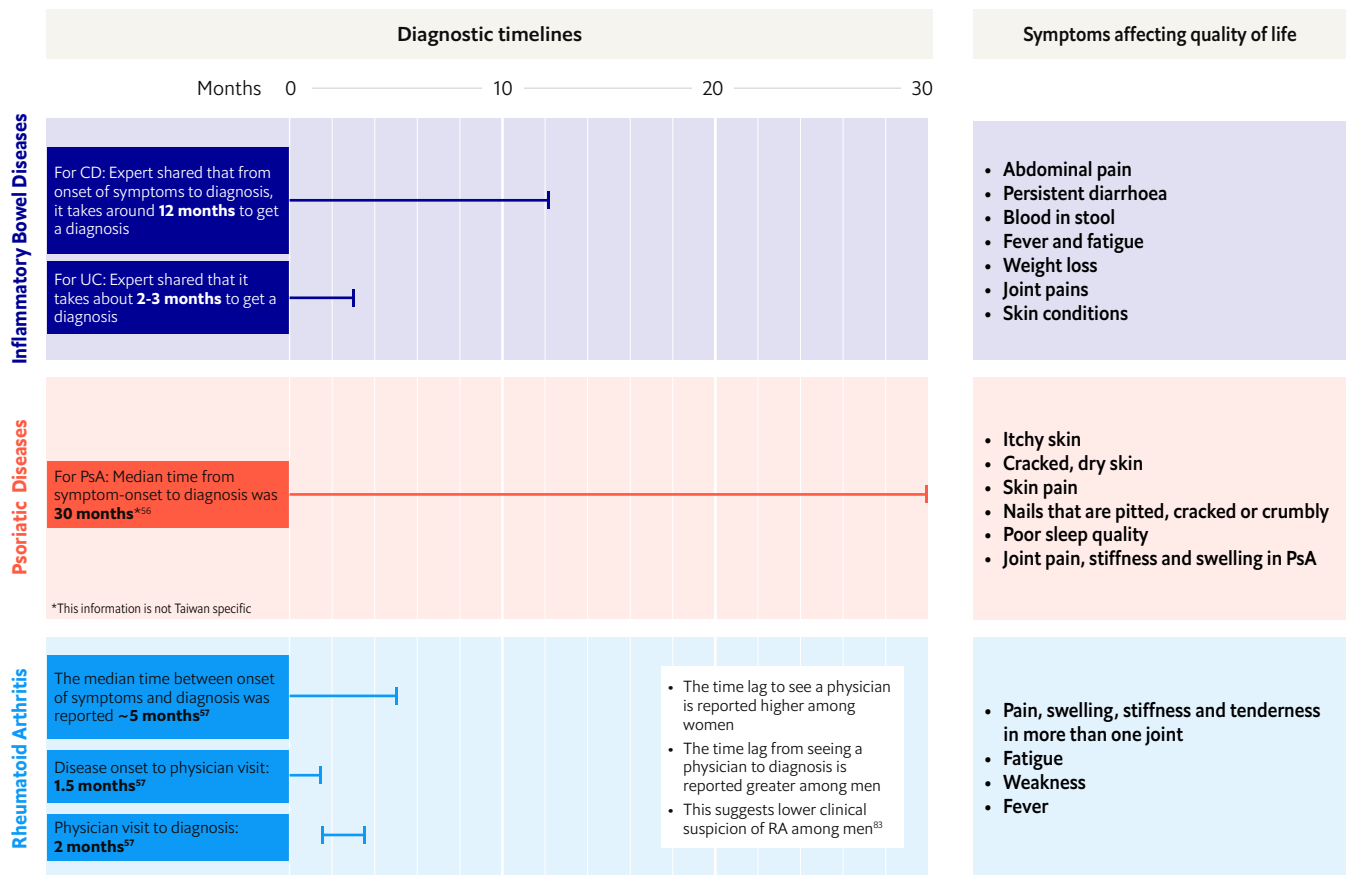


Figure 5 reveals the diagnostic delays in Taiwan for the IMIDs studied. Patients with IBD endure symptoms for two to three months (UC) to a year (CD) before receiving a confirmed diagnosis. Those with RA wait an average of five months. Diagnostic delays in psoriatic diseases are much longer and though Taiwan-specific data is lacking, a population-based study shows PsA sufferers face an agonising 2.5 years before their condition is properly identified.<sup>53</sup> These long wait times without proper care can greatly harm patients’ daily lives and may worsen their condition. There could be several reasons for such delays.

Dr Yen notes that awareness among patients and physicians regarding RA has improved over time but awareness continues to be low for IBD, as it is a less common disease than RA and PsO. In Asian countries, difficulty in differentiating IBD from intestinal tuberculosis may be compounding factors delaying the diagnosis.<sup>55</sup>

Various organisations are working towards increasing awareness of IMIDs in Taiwan. The Taiwan Society of Inflammatory Bowel Disease (TSIBD) works on improving awareness of IBD and streamlining disease management.<sup>56</sup> The Taiwan IBD Caring Group, established in 2019,



also works on IBD. The Psoriasis Association Taiwan, a non-profit patient organisation, works on raising public awareness through education and by advocating for patient rights.<sup>57</sup> In the case of RA, Dr Tsai explains that both the Taiwan Rheumatology Association and patient groups organise educational meetings to improve awareness. "Various media platforms are used to raise awareness including medical programmes on television and short videos on YouTube," she adds.

Diagnostic delays also occur due to a dearth of physicians sub-specialising in IMID care and regional disparities in access to these specialists. Dr Tsai notes that "In Eastern regions like Hualien and Taitung, there are only a couple of rheumatologists specialising in inflammatory arthritis, making referrals and management very challenging. Physicians specialising in IBD are few and concentrated in specific centres." To ease bottlenecks in specialist evaluation for

IBD, screening using faecal calprotectin (FC) has proven beneficial. As Dr Burisch explains, "Faecal calprotectin testing is quite a useful non-invasive tool to select those who need referral to a gastroenterologist for specialist care. We can avoid endoscopies which are costly, uncomfortable and a bottleneck in healthcare systems." A meta-analysis showed a pooled sensitivity of 93% and a pooled specificity of 96% for FC testing to rule in/out IBD. The study estimated that the use of FC screening would reduce the number of adults needing an endoscopy by 67%.<sup>24</sup> The United Kingdom (UK) and Australia are forerunners in reimbursing the FC test for screening in patients with symptoms suggestive of IBD.<sup>58,59</sup> However, Dr Yen notes that the cost of faecal calprotectin testing in Taiwan is almost the same as a colonoscopy and that the test is not reimbursed by the national insurance. So, it is not widely used in daily clinical practice.



### Ensure patients with multisystem diseases receive multidisciplinary care

Various factors such as logistical barriers, including the physical location of specialists, a lack of awareness among patients and healthcare professionals (HCPs), as well as a lack of infrastructure for integrated care models are significant obstacles to multidisciplinary care in Taiwan. Experts note that patients are also less forthcoming about their comorbidities due to short consultation times with physicians and concerns over whether the symptoms are relevant to the specialist being seen. Often patients see different specialists for different symptoms and do not realise that they are linked to the underlying IMID. Dr Tsai notes her efforts in eliciting detailed history of comorbidities in her clinic and educating patients about integrated care for these problems.

### Address comorbidities and mental health

Patients with the IMIDs of interest have a higher prevalence of cardiovascular and cerebrovascular comorbidities due to common inflammatory pathways and the impact of treatments.<sup>3,4</sup> Patients with RA and severe PsO have a greater risk of cardiovascular mortality.<sup>60,61</sup> Patients with IBD have an increased risk of ischaemic heart disease, stroke and arrhythmias.<sup>62,63</sup> Recognising this risk, consensus recommendations have been put forth in Taiwan for screening and management of cardiovascular diseases in relation to RA and PsO.<sup>4,64,65</sup>

An increased incidence of anxiety, depression and schizophrenia has also been noted in the three IMIDs of interest.<sup>13,14</sup> Suicidal ideation is increased about two-fold among patients with PsO as compared to those without.<sup>15</sup> The increased incidence of psychological disorders can pre-date the diagnosis of IMIDs, suggesting that the problem is not simply reactive to the debilitating illness.<sup>13</sup> A study using the National Taiwanese Health Insurance Database between 2001 and 2020, which included 12,612 patients with RA who had received novel agents for treatment, found that mental illness developed within five years of initiating therapy in 13.6% of patients, while 12.1% of patients had a pre-existing mental illness.<sup>66</sup> Poor mental health has also been associated with compromised disease outcomes in RA.<sup>67,68</sup> However, the guidelines for management of these diseases often overlook the importance of addressing mental health concerns. For instance, Taiwan's guidelines for PsO management fail to specify the need for mental health support in contrast to international guidelines.<sup>16,69</sup> This is especially important as emotional stress has been linked to both the progression and exacerbation of PsO symptoms.<sup>10</sup> Given the established correlation between psychological well-being and PsO outcomes, integrating mental health support into standard care protocols for patients would provide more comprehensive treatment.





In Taiwan, access to mental health care in general is challenging, especially in rural areas. Furthermore, there has been a long-standing focus on institutional rather than outpatient care for mental health disorders in the country.<sup>17</sup> In 2022, the government amended the Mental Health Act to advance mental health through the establishment of community-based mental health centres. These centres could be leveraged to offer better support to patients with IMIDs. However, the lack of public awareness, inadequate resource allocation, absence of clear objectives and incomplete services must be addressed to improve these centres' performance.<sup>17</sup>

#### **Improve supportive care**

Rehabilitative joint care is key to reducing pain and disability in advanced RA and PsA.<sup>70</sup> Moving from hospital-based rehabilitation programmes to self-care by empowering patients with support from nurses has been shown to produce beneficial outcomes. A study in Taiwan studied 224 patients randomly assigned to an eight-week programme of self-management with individualised support from a nursing team versus a control arm of standard care. Patients in the intervention arm had greater improvements in physical functioning, self confidence in their ability to deal with pain and self-management behaviours after six months of the programme.<sup>71</sup> Expanding such efforts would improve the patient-centred care while simultaneously reducing the cost burden on healthcare systems.

Sexual dysfunction is another common problem across IMIDs, stemming from the physical and psychological constraints imposed by these conditions and associated comorbidities.<sup>52,72,73,74</sup> Furthermore, patients also need support to address concerns about the risk of IMIDs in potential offspring, and to navigate complex decisions on treatment during pregnancy and lactation.<sup>75</sup> A retrospective analysis of the TSIBD database, which included 17 patients with 21 pregnancies between 2009 and 2019, revealed adverse pregnancy outcomes in 23.8% of patients and low birth weight in 14.3% of births. During pregnancy, one-third of patients changed their treatment regimen, discontinuing therapies such as 5-aminosalicylic acid (5-ASA), immunosuppressants, corticosteroids or biologics – a practice that is not in line with international guidelines. There is clearly an unmet need for better awareness and multidisciplinary support for managing sexual and reproductive concerns in patients with IBDs in Taiwan.<sup>76</sup>

#### **Establish multidisciplinary clinics and leverage specialist nurse support**

Multidisciplinary specialist clinics can overcome some of these logistical obstacles to integrated care, reduce visits to emergency rooms and hospitalisations, as well as improve disease control and HRQoL.<sup>77</sup>

### Best practice example: Integrated care model for patient-centred care in South Korea

South Korea has developed IBD clinics to provide integrated care across departments in a patient-centred manner. The Severance Hospital, for example, has IBD clinics with core members comprising gastroenterologists, surgeons, specialist nurses, radiologists, dietitians, social workers and pharmacists. Ad hoc members, including psychiatrists, dermatologists, rheumatologists, obstetricians and others, get involved as necessary. Clinics provide patient care, patient outreach for educational activities, and administrative work for system management. Telephone services support patients who miss outpatient appointments, and a separate service for pharmaceutical consultation are provided.<sup>26</sup>

Dr Yen notes logistical challenges for patients to see multiple specialists in public hospitals in Taiwan in a coordinated way. "In some private hospitals, doctors' schedules are aligned so that the patient can come once and see all necessary doctors in one visit. This is more practical than having multiple doctors see the patient simultaneously," he says. Specialist nurse programmes for management of IMIDs support patient assessment, care planning and provision of integrated treatment in many countries.<sup>78</sup> Engagement of specialist nurses in IBD care has been shown to improve patient satisfaction, increase remission rates, and reduce hospital visits and inpatient length-of-stay.<sup>79</sup> Support from dermatology nurses has been shown to increase treatment adherence, offer better disease control and improve quality of life in patients with PsO.<sup>80</sup> In Taiwan, greater government investment is needed in developing structured specialist nurse programmes.

In addition to the development of cross-disciplinary nurses who can care for different IMIDs could offer time- and cost-savings. Inspiration can be drawn from the specialist nurse programmes that have been active in providing biologic therapies across IMIDs in different countries for years.<sup>81</sup> "In many hospitals in Denmark the nursing staff in the outpatient clinic is shared between the specialties so that you have one person that sort of connects everything and usually the nurses are the patient voice," says Dr Burisch. A postgraduate IMID nurse training programme has been developed in Belgium through collaboration between gastroenterology, rheumatology and dermatology, which could be replicated in Taiwan.<sup>82</sup>

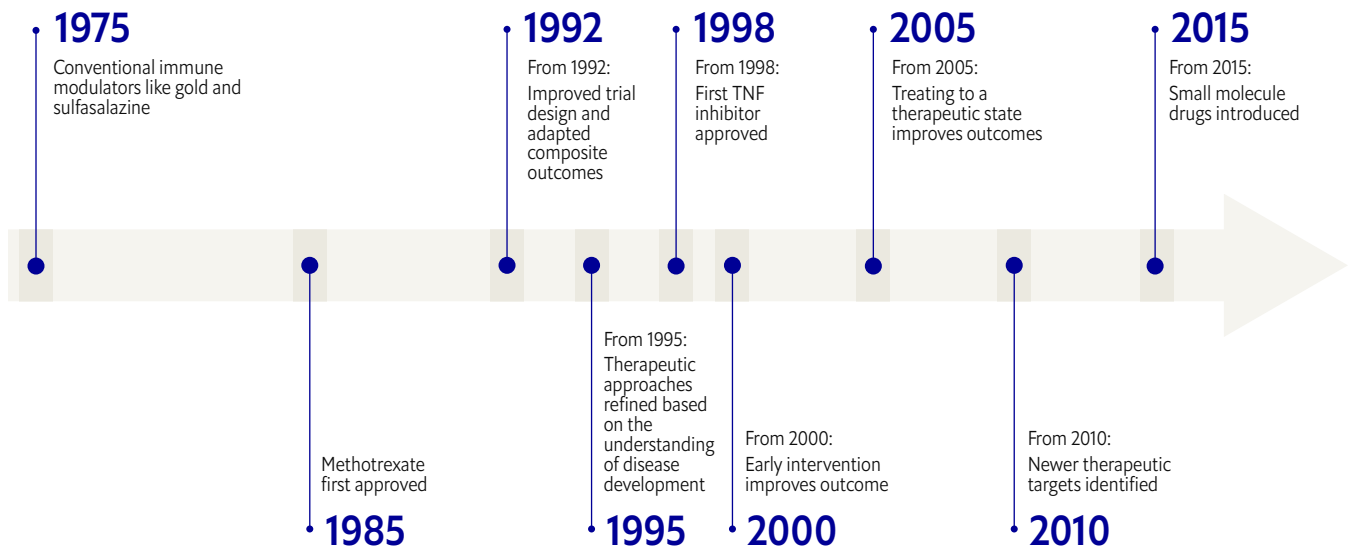
### Optimise treatment to achieve deeper responses and remission

Conventional treatment for IMIDs, including steroids and immune modulatory drugs such as methotrexate and azathioprine, offer modest, and often short-lived, responses that are associated with toxicities.<sup>2</sup> The advent of novel immunomodulatory therapies, including biologics and small molecules, has transformed the treatment landscape, facilitating a move from symptom control towards deeper remissions in IMIDs, often resulting in better health outcomes (see Figure 6).<sup>2</sup>

**"In many hospitals in Denmark the nursing staff in the outpatient clinic is shared between the specialties so that you have one person that sort of connects everything and usually the nurses are the patient voice"**

Johan Burisch, Consultant in the Gastrounit, at Hvidovre Hospital's Medical Division in Denmark

Figure 6: Timeline of the development of therapeutics for IMIDs



Source: Adapted from McInnes IB et al. Immune-mediated inflammatory disease therapeutics: past, present and future.<sup>2</sup>

**Address gaps in guidelines and reimbursement**

Current management of IMIDs is centred on a treat-to-target (T2T) approach, which involves using validated instruments to frequently monitor disease activity and modify treatment to achieve minimal disease activity or remission.<sup>18,83,84</sup> However, significant gaps exist between international treatment guidelines and reimbursement of therapies in Taiwan, thus impacting the widespread adoption of a T2T approach (Figures 7 and 8).

**“In treating- to- target, I think each doctor’s standards are different. For doctors like myself, besides these objective data, I also care about the patient’s quality of life.”**

Yun-Chen Tsai, Rheumatologist, Division of Rheumatology, Allergy and Immunology at, Chang Gung Memorial Hospital, Taiwan

International guidelines set comprehensive treatment targets. The Selecting Therapeutic Targets in IBD Initiative-II (STRIDE-II) criteria, for example, include long-term goals such as absence of disability and restoration of normal quality of life, in addition to clinical endpoints. Failure to achieve these targets necessitates a reconsideration of the treatment approach.<sup>84</sup> Similarly, the European guidelines for PsO (EuroGuiDerm) recommend achieving a Dermatology Life Quality Index (DLQI) score of less than two as a treatment target.<sup>85</sup> In contrast, while Taiwan’s IBD guidelines acknowledge quality of life as a treatment target, they do not recommend routine endoscopy to assess treatment response.<sup>19,20,65</sup> For PsO care Taiwan adopts a less stringent DLQI target of five or less.<sup>20,65</sup> Regarding RA, while doctors in Taiwan follow a T2T approach, there’s flexibility in its application. As Dr Tsai notes, “In treating-to-target, I think each doctor’s standards are different. For doctors like myself, besides these objective data, I also care about the patient’s quality of life.”

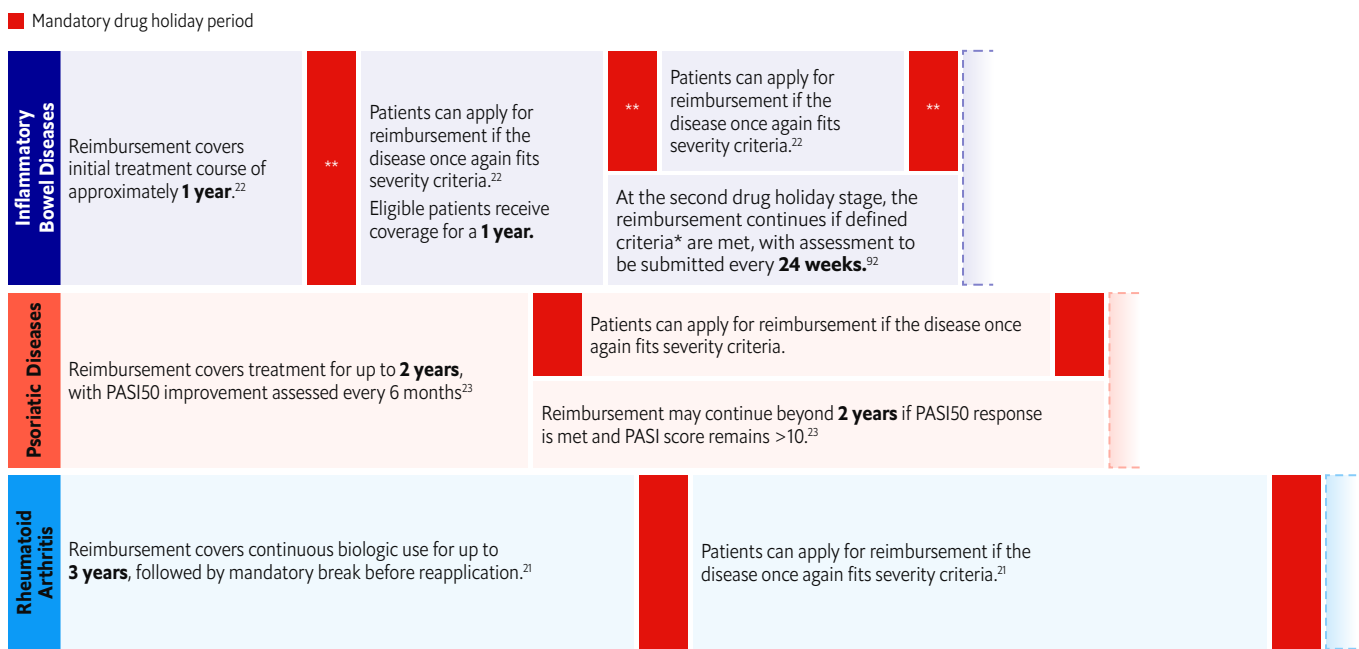
**Figure 7: Gaps between international treatment guidelines and Taiwan treatment and reimbursement guidelines for select IMIDs** <sup>18, 21-23, 65, 83-92</sup>

	International guidelines	Taiwan guidelines
<b>Inflammatory Bowel Diseases</b>	<p><b>Treat to target approach STRIDE II guidelines<sup>84</sup></b></p> <ul style="list-style-type: none"> <li>• Immediate target (3 months): Clinical response</li> <li>• Intermediate targets (3-6 months): Clinical and biochemical remission</li> <li>• Long-term target (6-12 months): Endoscopic healing and restoration of normal QoL.</li> </ul> <p><b>AGA recommendation on Biologics<sup>86,87</sup></b></p> <ul style="list-style-type: none"> <li>• Moderate-to-severe UC: Biologics or small molecules must be considered as first-line therapy.</li> <li>• Moderate-to-severe CD: Biologic monotherapy over thiopurine monotherapy for initial phase of treatment aimed at remission.</li> </ul> <p><b>ECCO recommendation on maintenance and discontinuation<sup>88,89,90</sup></b></p> <ul style="list-style-type: none"> <li>• UC: No specific discontinuation guidance.</li> <li>• CD: Maintain for remission; lack definitive recommendations on anti-TNF withdrawal.</li> <li>• Decisions should be individualised for both conditions.</li> </ul>	<p><b>Taiwan treatment goals<sup>92</sup>:</b></p> <ul style="list-style-type: none"> <li>• UC: Consider stopping medication if Mayo score <math>\leq 2</math> and endoscopic subscore <math>\leq 1</math> for 2 years (4 evaluations) in adults, or PUCAI <math>&lt; 5</math> for 2 years (4 evaluations) in children.</li> <li>• CD: Consider stopping medication if CDAI <math>&lt; 150</math> for 2 years (4 evaluations) in adults, or PCDAI <math>&lt; 10</math> for 2 years (4 evaluations) in children.</li> </ul> <p><b>Reimbursement for biologics requires<sup>92</sup>:</b></p> <ol style="list-style-type: none"> <li>1) Registration for the catastrophic illness card,</li> <li>2) Failure of conventional therapy for 6 months and</li> <li>3) Meeting disease severity criteria:             <ul style="list-style-type: none"> <li>• UC: Mayo score of <math>\geq 9</math> and Mayo endoscopy subscore of <math>\geq 2</math> for UC patients.</li> <li>• CD: CDAI score of <math>\geq 300</math> or a CDAI score of <math>\geq 100</math> with prior CD-related surgery</li> </ul> </li> </ol>
<b>Psoriatic Diseases</b>	<p><b>Treat to target approach EuroGuiDerm guidelines<sup>85</sup></b></p> <ul style="list-style-type: none"> <li>• Treatment goal is a PASI score improvement of <math>&gt; 90\%</math> or absolute PASI <math>\leq 2</math> with a DLQI <math>&lt; 2</math>.</li> <li>• The guidelines offer provision for individual countries to adjust these goals based on local conditions.</li> </ul> <p><b>EuroGuiDerm guidelines<sup>85</sup></b></p> <ul style="list-style-type: none"> <li>• Use biologics for moderate-to-severe PsO if first-line conventional agents show inadequate response, are contraindicated, or are not tolerated. Also, use biologics if conventional treatment is expected to fail.</li> </ul>	<p><b>Taiwan treatment goals<sup>23,65</sup>:</b></p> <ul style="list-style-type: none"> <li>• 75% reduction in PASI score (PASI75) is used to evaluate treatment success.</li> <li>• For moderate-to-severe PsO, the goal is at least a 50% reduction in PASI (PASI50) coupled with improvement in quality of life (DLQI score <math>\leq 5</math>).</li> </ul> <p><b>Reimbursement for biologics requires<sup>23</sup>:</b></p> <p>For moderate-to-severe PsO, biologics are reimbursed if prior phototherapy and at least 2 conventional DMARDs have failed.</p>
<b>Rheumatoid Arthritis</b>	<p><b>Treat to target approach ACR and EULAR guidelines<sup>18,83</sup></b></p> <ul style="list-style-type: none"> <li>• Aim for low disease activity or remission with bDMARDs/tsDMARDs, based on patient's status, response, and preferences.</li> </ul> <p><b>ACR and EULAR recommendation on DMARD therapy<sup>18,83</sup></b></p> <ul style="list-style-type: none"> <li>• Moderate-to-severe disease activity and no prior exposure to DMARDs: Start csDMARD</li> <li>• Suboptimal response to csDMARD: Add bDMARD or tsDMARD, use treat-to-target approach.</li> </ul> <p><b>ACR and EULAR on DMARD maintenance and discontinuation<sup>18,83</sup>:</b></p> <ul style="list-style-type: none"> <li>• ACR: For patients who are at target for at least 6 months, maintaining the current dose, with dose reduction or gradual discontinuation as secondary options if necessary, while avoiding abrupt discontinuation.</li> <li>• EULAR: Consider tapering after sustained remission; avoid cessation..</li> </ul>	<p><b>Taiwan Treatment goal<sup>21,91</sup>:</b></p> <ul style="list-style-type: none"> <li>• Assess disease activity every 1–3 months and adjust therapy if not achieving remission or low disease activity.</li> <li>• After 2 years of continuous use of biologics, if DAS28 shows low disease activity, taper dose is recommended.</li> </ul> <p><b>Reimbursement for biologics requires<sup>21</sup>:</b></p> <ol style="list-style-type: none"> <li>1) Fulfill ACR criteria for RA</li> <li>2) Have continuously active RA, which is defined as a DAS 28 score of <math>&gt; 5.1</math></li> <li>3) Have failed csDMARD treatment, defined as being treated with at least two csDMARDs which resulted in no significant efficacy in order to be considered for reimbursement of a bDMARD</li> </ol>

Abbreviations:

- STRIDE II**= Selecting Therapeutic Targets in Inflammatory Bowel Disease-II;
- QoL**= Quality of life;
- AGA**= American Gastroenterology Association;
- ECCO**= European Crohn's and Colitis Organisation;
- PUCAI**= Paediatric Ulcerative Colitis Activity Index;
- CDAI**= Crohn's Disease Activity Index;
- PCDAI**= Pediatric Crohn's Disease Activity Index;
- PSAI**= Psoriatic Area and Severity Index Score;
- DLQI**= Dermatology Life Quality Index;
- DMARDs**= Disease Modifying Anti Rheumatic Drugs;
- ACR**= American college of rheumatology;
- EULAR**= European League Against Rheumatism;
- csDMARDs**= conventional biologic Disease Modifying Anti Rheumatic Drugs;
- bDMARDs**= biologic Disease Modifying Anti Rheumatic Drugs;
- ts DMARDs**= targeted synthetic Disease Modifying Anti Rheumatic Drugs;
- DAS 28**= Disease Activity Score 28

**Figure 8: Guidelines for reimbursement periods of advanced therapies for select IMIDs in Taiwan<sup>21,22,23,92</sup>**



\*\*Mandatory drug holiday period for IBD is 3-months

\*The defined criteria for continuing treatment after the predetermined total course (approximately 12 months) in adults are as follows:

- For UC: Two relapses within 3 months of drug holiday with the Mayo score ≤6, and the Mayo endoscopic subscore ≤1
- For CD: Two relapses within 3 months of drug holiday with CDAI ≥ 300

Abbreviations:

**PSAI**= Psoriatic Area and Severity Index Score;

**PASI50**= 50% reduction in PASI;

**CDAI**= Crohn’s Disease Activity Index

The process continues until the desired T2T targets achieved or treatment discontinuation criteria are met or treatment changed.

The latest ECCO guidelines for management of CD suggest that the choice of initial therapy should be based on several factors including efficacy, safety, patient characteristics, patient preference, disease characteristics, cost and access rather than being sequenced from conventional to advanced treatments.<sup>89</sup> In Taiwan, reimbursement for biologics in IBD requires failure of conventional treatment for six months and meeting predetermined severity criteria.<sup>22</sup> Mr. Chen describes the findings

on patient satisfaction from an unpublished study conducted by TAPO in collaboration with six patient groups representing various IMIDs. The study surveyed 736 patients with seven different IMID conditions including IBD, psoriatic diseases and RA. 37.7% of respondents were on advanced treatments. Among those on conventional treatments, 59.1% expressed dissatisfaction, with 81% citing poor efficacy as the primary reason. In contrast, 92% of patients on advanced treatments expressed satisfaction.

**“The need for a catastrophic illness card for reimbursement of biologics in IBD means that patients often start treatment with out-of-pocket payments. They may also choose to self-pay to continue the treatment after one year of treatment when a mandatory break from insurance support is required, due to the termination of the health insurance coverage.”**

Wei-Han Chen, Secretary General of the Taiwan Alliance of Patients' Organizations

Mr. Chen explains that “The need for a catastrophic illness card for reimbursement of biologics in IBD means that patients often start treatment with out-of-pocket payments. They may also choose to self-pay to continue the treatment after one year of treatment when a mandatory break from insurance support is required, due to the termination of the health insurance coverage.” On the contrary, Dr Tsai notes that patients with RA do not require a catastrophic illness card for reimbursement of biologics. However, she elaborates that “Reimbursement in RA, especially for second-line biologics, is a challenge. There are patients who, even after 10 years, still have joint inflammation in RA because they cannot get access to biologics and are unwilling or unable to pay out of pocket.” Based on the data shared by Mr Chen from a study conducted by TAPO among patients with IMIDs showed that those with IBD had a relatively high ratio of OOP; about 20% of patients were paying for their own treatment.

Evidence suggests that more intensive treatment strategies in the early/first-line management of IMIDs can be very impactful on patients' HRQoL. A recent study on CD demonstrated that a top-down treatment approach, which combines a specific anti-TNF agent with a conventional immune modulator from the outset, showed greater rates of achieving sustained steroid-free and surgery-free remission one year after treatment initiation, without a notable increase in serious side effects.<sup>93</sup> Dr Burisch notes that this study provides further evidence that top-down treatment of CD leads to better short-term outcomes. He anticipates that future research could confirm the long-term benefits and explore the potential for de-escalating treatment in responsive patients, thus highlighting the evolving nature of CD management strategies.

**A study conducted by TAPO among patients with IMIDs showed that those with IBD had a relatively high ratio of OOP; about 20% of patients were paying for their own treatment.**

Wei-Han Chen, Secretary General of the Taiwan Alliance of Patients' Organizations

The optimal duration of biologic therapy for IMIDs is still unclear, and the benefits of prolonged treatment must be balanced against the risks and costs, including the potential for opportunistic infections and cancers.<sup>94</sup> The optimal population for discontinuation of biologics in IMIDs also remains to be identified.<sup>94,95</sup> Global and Taiwanese studies have shown that discontinuation of biologics after 12 months of therapy for IBD results in disease relapses in 30-50% of patients. About 80-90% of patients can achieve clinical response after re-treatment, but the depth of response varies, and reintroducing anti-TNF agents in IMIDs increases the risk of developing neutralising antibodies that render the drugs ineffective.<sup>22,96,97,98</sup> Weighing the risks and benefits, Dr Burisch explains that in his centre, long-term maintenance with biologics in IBD is continued, and if patients request cessation of treatment after good control for two years, a

shared decision-making process is followed to discuss pros and cons before a final decision is made. This is in contrast to Taiwan's guidelines that do not recommend routine endoscopy to assess the extent of treatment response, and reimbursement practice that requires a mandatory break in biologic therapy for IBD for three months regardless of the depth of response, before reapplying for further reimbursement. Dr Yen says, "Very few IBD cases achieve significant improvement within the one-year insurance coverage period for the advanced therapies in Taiwan. Clinical remission might be achievable within a year, but that's no longer our target. Our targets are healing or mucosal healing, which typically takes two to five years. Therefore, the insurance system should allow more flexibility to treat until these treatment targets are reached before considering stopping or reducing medication."

**“Very few IBD cases achieve significant improvement within the one-year insurance coverage period for the advanced therapies in Taiwan. Clinical remission might be achievable within a year, but that’s no longer our target. Our targets are healing or mucosal healing, which typically takes two to five years. Therefore, the insurance system should allow more flexibility to treat until these treatment targets are reached before considering stopping or reducing medication.”**

Hsu-Heng Yen, Gastroenterologist at Changhua Christian Hospital, Taiwan





**Understand unmet needs and patient preferences to improve treatment adherence**

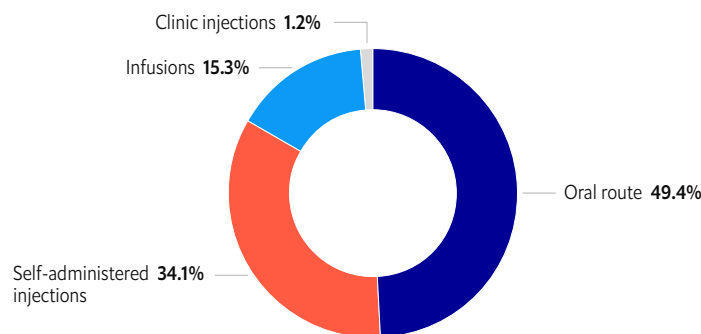
Dr Tsai highlights that medication adherence is a significant problem among patients with RA in Taiwan. “The first reason is a lack of understanding of the importance of the medication, second is fear of taking multiple medications, and third is a tendency to taper off medication use once they are feeling better,” she explains.

The ALIGN (Atrasentan in Patients With IgA Nephropathy) study, a global, cross-sectional, self-administered survey looked at 7,197 patients with ankylosing spondylitis, IBD, PsO, PsA or RA that were either receiving conventional DMARDs (40.3%), anti-TNF agents (32%) or combined therapy with conventional DMARDs and anti-TNF agents (27.7%) for management of their illness. Concern scores regarding side effects of treatment were similar for DMARDs and anti-TNF agents. For all IMIDs except PsA, use of anti-TNF agents alone or in combination with conventional DMARDs was associated with significantly higher medication adherence (two to -21-fold) as compared to conventional therapy alone. Beliefs about the need for treatment rather than treatment concerns had a greater impact on medication adherence. This raises the importance of counselling by HCPs to improve awareness

among patients about disease severity, risk of complications and the need for treatment.<sup>99</sup> The use of Patient Support Programmes (PSPs), which are enhanced self-management support programmes providing individual counselling, training, support and reminders, can facilitate improved treatment adherence.<sup>100</sup>

Understanding the unmet needs of patients and their preferences will facilitate a more patient-centred approach and improved treatment adherence. One such study of patient needs and expectations was conducted in Asia, and included 45 patients with moderate-to-severe PsO in Australia, Japan, South Korea and Taiwan. It found that the key driver of treatment choice was the ability to enjoy clearer skin for a longer period and once a good response was achieved, patients on bDMARDs were more concerned about symptom recurrence rather than treatment side effects (44% v. 19%).<sup>101</sup> A convenient route of drug administration is also a priority for patients. A global study explores the reasons for these preferences, which may support the shared decision-making process when choosing appropriate treatments, and increase patient satisfaction with, and adherence to, treatments (see Figure 9).<sup>102</sup> More data are required for Taiwanese patients regarding their preferred routes of therapy.

**Figure 9: Global study on treatment mode preferences among PsA patients<sup>102</sup>**



**Americans were more likely to pick oral therapies over self-administered injections, while Europeans were more likely to prefer self-administered injections.**

**Best practice example: IMID registry for shared decision making in the Netherlands**

Integrating data regarding patient and provider preferences into the electronic medical record can facilitate better shared decision-making. The Erasmus MC in Rotterdam, Netherlands, has developed the IMID registry, which is a cross-disciplinary, collaborative longitudinal cohort registry that includes patients with inflammatory arthritis (IA), IBD, atopic dermatitis, PsO, uveitis, Behçet disease, sarcoidosis and systemic vasculitis. Provider preferences and Patient-Reported Outcome Measures (PROMS) regarding adherence to medications, side effects, quality of life, productivity at work, disease-related damage and disease activity are collected at fixed intervals using validated tools. In the case of IBD and IA, the questionnaires were aligned with the corresponding International Consortium for Health Outcomes Measurement (ICHOM) outcome sets. The web-based data capture system for the registry is linked to the patient's electronic health record. The outcome scores are shown on the platform similar to laboratory test results. Between April 2018 and September 2022, 1,417 patients have been enrolled. The mean age of enrolled patients enrolled is 46 years, 56% are female, and the average rate of filled-out questionnaires was 84% at baseline which dropped to 72% at one 1 year of follow-up. Information from these surveys will be used to improve care provision with shared decision-making, for research purposes, and the implementation of value-based healthcare.<sup>29</sup>



The use of complementary therapies like Traditional Chinese Medicine (TCM) is prevalent in Asia. These treatments are viewed as individualised, holistic and lacking serious side effects, but the fact is they may interact with conventional medicines. Therefore, physicians need to acknowledge their use and approach this aspect with patients in an open manner.<sup>103</sup> Dr Tsai notes that efforts that have been made to incorporate the use of TCM in patient care. "Some patients prefer integrated care with TCM. At our centre, we have TCM doctors who understand immune-related diseases and can adjust treatment accordingly, avoiding conflicts between TCM and Western medicine", she notes.

### **Make care timely and more accessible**

Close monitoring for disease flares and timely intervention is critical for the management of IMIDs. This is a challenge with current models of ambulatory care that rely on scheduled outpatient visits. Countries across the world are developing remote monitoring strategies for early detection of flares. The lack of access to FC testing in Taiwan is an impediment to developing remote monitoring protocols.

Telemedicine is improving access to multidisciplinary care globally. Tele-nutrition is gaining ground for nutritional counselling, dietary recommendations and follow-up for patients with IBD.<sup>104</sup> The use of e-health modalities and self-learning tools to improve mental health support for patients with IMIDs is being explored through programmes like ActforIBD.<sup>105</sup> Taiwan is also developing an online self-management programme for RA, which is being shaped through the collection of data on expectations of both patients and HCPs for individualised, patient-centred management.<sup>106</sup>

### **Best practice example: Individualised remote monitoring of IBD in Denmark**

The Constant Care Model, which has been implemented since the year 2000 in Denmark, is a great example of remote monitoring of IBD. Information on flares is collected through a web-based application, which includes patient-reported data on their disease symptoms and home-based collection of FC, an objective marker of inflammation. These data are fed into the patient-physician database and patients are colour coded as red (severe activity), yellow (mild-to-moderate) and green (remission). These data are constantly reviewed by specialist nurses to facilitate early identification and management of flares.<sup>25</sup> The application of such e-health modalities for remote disease monitoring has been shown to empower patients, improve compliance with treatment, facilitate earlier remissions, improve HRQoL, and reduce emergency room visits and hospitalisations.<sup>105</sup>

# Conclusion and calls to action

IMIDs are chronic multisystem disorders that decrease life expectancy and cause significant morbidity, disability and financial burden for patients. Treatment options for these IMIDs have greatly expanded, but health outcomes in Taiwan have not kept pace due to gaps in the care pathway and misaligned healthcare financing policies. Improving multidisciplinary, patient-centred care is key to better disease control, improved quality of life and enhanced productivity of patients with IMIDs in.

**Address inefficiencies in the care pathway:**

Improving awareness among patients and HCPs, especially primary care physicians and GPs, through efforts of patient and physician organisations is the cornerstone of early diagnosis and timely treatment of IMIDs.<sup>56,57</sup> Removing the bottlenecks in specialist evaluations will benefit both patients and healthcare systems. For instance, better access to the FC test in Taiwan can facilitate screening for IBD to rule out the disease and reduce

the need for endoscopies as appropriate. For ongoing care and monitoring, the development of e-health solutions can facilitate patient-centricity and timely interventions for flares. The Constant Care Model in Denmark, which uses home-based FC testing in combination with e-health solutions and specialist nurse support for remote monitoring of patients with IBD, could be adapted to the Taiwanese context and for other IMIDs including RA and PsO.<sup>25</sup> Comorbidities in IMIDs, particularly mental health issues, should receive more attention and support.<sup>17</sup> Guidelines for the management of IMIDs should incorporate psychosocial support, especially community-based mental health support. Moving from hospital-based rehabilitation programmes to self-management in combination with nursing support can empower patients.<sup>71</sup> Patients need better management of their psychological and reproductive concerns, and this requires relevant training and support for physicians.

**Develop cross-cutting solutions for IMIDs:**

IMIDs have common pathogenic pathways, may co-occur, and have similar comorbidities such as cardiovascular, cerebrovascular and psychological disorders.<sup>3,4,13,14</sup> Developing programmes and guidelines with an overarching focus on IMIDs combined with the establishment of multidisciplinary clinics with cross-disciplinary specialist nurses can improve awareness of these diseases in addition to offering more comprehensive, integrated and timely care.<sup>81</sup> The potential time- and cost-savings of this approach should be explored. Basket study designs are slowly being implemented in clinical trials for IMIDs. For example, the TRANSREG study in Europe is evaluating the efficacy and safety of low dose interleukin 2 across 14 different autoimmune and inflammatory diseases. Experiences from the trial setting can be transposed into clinical practice.<sup>107</sup>

**Adopt a multi-pronged approach to improve**

**T2T care:** Even with the advancements in therapy, in the real-world setting, 30-70% of patients with IMIDs do not achieve deep remissions.<sup>22,108,109</sup> Efforts are ongoing to develop better predictive models that can leverage AI tools personalised treatment strategies that reduce treatment changes due to poor response.<sup>27,28,110,111</sup> Greater emphasis on the T2T approach for management of IMIDs will improve patient outcomes and HRQoL. A multi-pronged approach is necessary to achieve T2T including raising awareness among patients and HCPs regarding recommended treatment end-points, aligning Taiwan's guidelines with international recommendations and improving reimbursement policies to facilitate the achievement and maintenance of deeper remission. Understanding patient needs and expectations will also help improve adherence. In addition, investments should continue to be made in the development of new agents with better response rates.





**Transition to a value-based care model to fulfil unmet needs of patients:** PROMs are central to the development of value-based, patient-centred care models. Efforts to integrate PROMs into electronic medical records, as being pursued by the Erasmus MC in Rotterdam, can be used as a case study to replicate efforts in Taiwan.<sup>29</sup> The Taiwan Rheumatology Association supported clinical electronic registry (TRACER) enrolls patients with autoimmune joint diseases such as RA, systemic lupus erythematosus, ankylosing spondylitis, and psoriatic diseases. Data on demographics, disease activity, autoantibodies status, medication and therapeutic responses are collected at baseline and every three months during treatment with DMARDs.<sup>112</sup> Similarly, the Taiwan Society of Inflammatory Bowel Disease registered database collects data on demographics, clinical information, disease phenotype, treatment and outcomes for patients with IBD.<sup>113</sup> Integrating PROMs into these real-world registries for IMIDs in Taiwan can offer crucial insights into providing better patient-centric care. Such integration will need to overcome barriers at the patient-level (for providing the data), physician-level (for collecting and interpreting data) and systems-level (for electronic integration of data). Furthermore, analysing data from these registries to assess patient outcomes with current practices, such as drug holidays, can offer valuable insights to inform strategies for optimising care.

Within the value-based healthcare system model, a framework called the Care Delivery Value Chain (CDVC) has been developed to map patients' journeys with a focus on patient-relevant activities for each stage of the care pathway. Following the mapping, the care cycle is redesigned in consultation with patients to reduce inefficiencies and improve quality of care. The CDVC framework has been used in mapping the RA care pathway, with demonstrable improvements in processes such as the establishment of home-based blood taking and monitoring, as well as the regular incorporation of PROMs into the monitoring phase of treatment.<sup>30</sup> Use of such frameworks to optimise care pathways will improve patient experience and quality of life, ultimately translating into better health outcomes and productivity.

To provide high quality, patient-centred care for IMIDs, the foremost priority is to understand what patients' unmet needs and expectations are. Investing in understanding this space will be transformative in improving health policy that leads to more effective and efficient IMID care in Taiwan.

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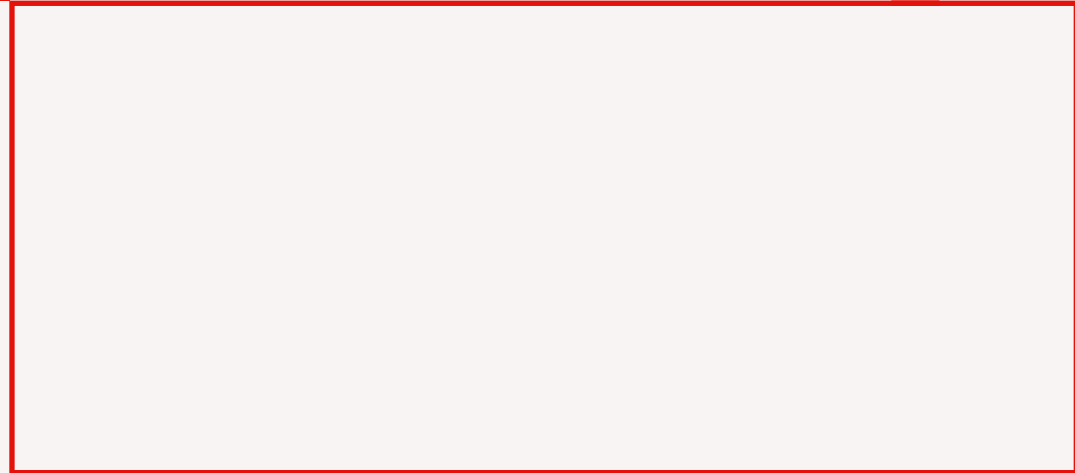
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