Modern Pain Assessment in Aged Care

An indepth look at the challenges, guidelines and practices

PainChek®
Intelligent Pain Assessment

PainChek® - About us

We began our journey at PainChek® in 2016 with a mission to give a voice to those who cannot reliably verbalise their pain.

Since then, we have delivered on our mission by providing objective, consistent pain assessment via the PainChek® app, which identifies and quantifies pain even where an individual is unable to effectively communicate.

Through the modern, validated PainChek® assessment framework, and our detailed pain analytics, we have enabled best-practice pain assessment and management for thousands of people worldwide who may otherwise have lived with undiagnosed and untreated pain.

PainChek®'s uniform approach to pain assessment has also ensured greater consistency and continuity in pain management, with the PainChek® app providing access to both the PainChek® observational pain assessment tool, and the Numeric Rating Scale (NRS). This functionality allows all residents to be assessed, and for their care to be considered in PainChek®'s detailed reporting suite, PainChek® Analytics.

PainChek® enables best-practice pain management for those living with pain in any environment, from those who cannot reliably self-report their pain, those who can, and for those whose ability to self-report their pain fluctuates.

The PainChek® solution has successfully supported pain assessment and management for thousands of adults worldwide living with dementia, disability, or other conditions which impact their ability to self-report pain. Building on this success and technology, the recently validated PainChek® Infant app ensures that pain can also be identified in pre-verbal children who have yet to learn to communicate their pain.

Globally, PainChek® has attained regulatory clearance as a medical device in Australia, Canada, the European Union, New Zealand, Singapore and the United Kingdom, with FDA review in the United States currently in progress.

For more information call **0333 577 3397** or visit **www.painchek.com/uk**

Contents

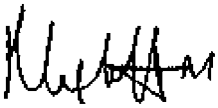
Foreword

Better recognition and identification of pain has always been needed in aged care, but it has never been more pressing than at this moment. There have been mounting calls for the UK government to deliver the much-anticipated social care reform and improve technology-enabled dementia care. This, coupled with the vast challenges for carers in COVID-19, is a clear signal that it's time to transform the way we assess and treat pain.

Timely detection and management of pain is integral to ensuring high quality of care and quality of life in aged care residents — and it starts with accurate pain assessment. Within this whitepaper, we've outlined:

- The main challenges facing the aged care industry when it comes to pain assessment
- A review of established pain assessment guidelines and frameworks, both for those who can and cannot self-report pain
- The benefits and limitations of these methods
- How PainChek® Universal harnesses technology to address existing challenges and improve pain assessment and management

The right solution supports pain assessment in all people and is usable by every healthcare professional in all locations. With PainChek® Universal, we are well on our way to address limitations with existing frameworks and make pain a new healthcare vital sign.

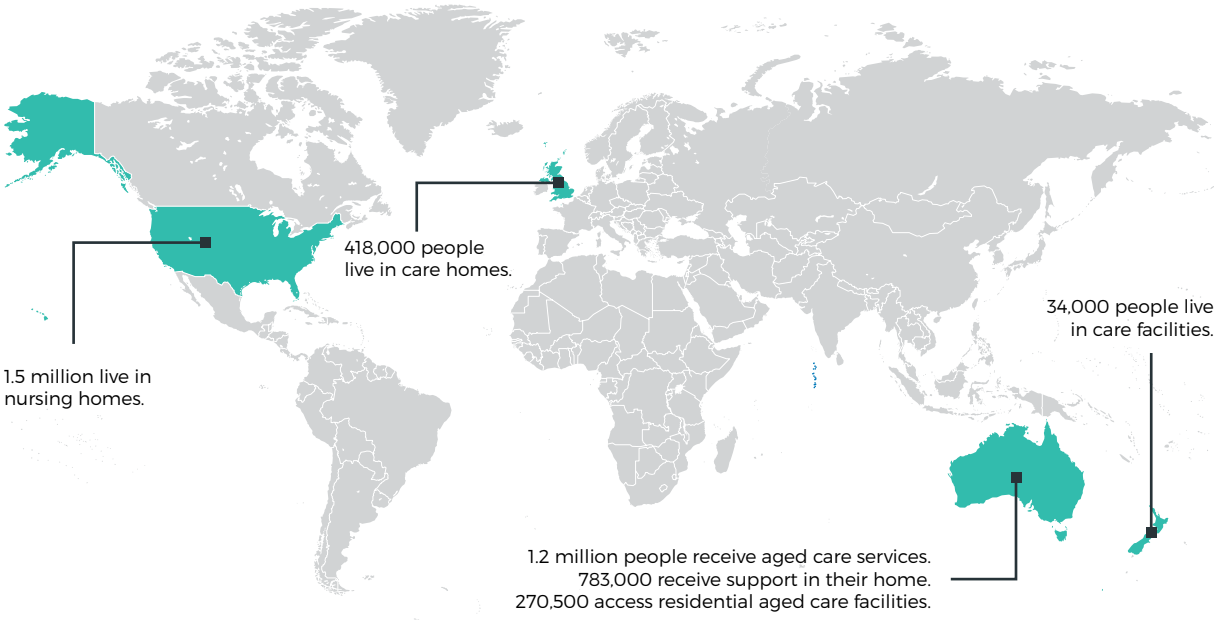


Philip Daffas
PainChek® CEO

Overview: The State of Aged Care

According to the United Nations[1], there are more than 962 million people globally aged 60 years or over. This number is more than twice as large as it was in 1980 — and is expected to double again to nearly 2.1 billion by 2050.

Whilst there are a wide variety of senior housing options available worldwide, such as independent living communities and assisted living sites, a significant proportion of older adults access aged care services either via home care or through a long term care facility, such as a care home or an aged care facility.



In Australia, more than 1.2 million people receive aged care services, with 783,000 receiving support in their home or other community-based settings and 270,500 clients accessing residential aged care facilities[2]. Across the Tasman in New Zealand there are approximately 77,000 people living with dementia, predicted to rise to 170,000 by 2050[3] while in the northern hemisphere it is estimated that approximately 418,000 people in the United Kingdom live in care homes[4]; and the Centers for Disease Control and Prevention estimates that more than 1.5 million residents live in nursing homes in the United States[5].

1 United Nations, Department of Economic and Social Affairs. (2017) World Population Ageing [online], p1. Available at https://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2017_Highlights.pdf (Accessed 5 May 2021).

2 Australian Institute of Health and Welfare. (2019) Aged care [online]. Available at https://www.aihw.gov.au/reports/australias-welfare/aged-care (Accessed 5 May 2021).

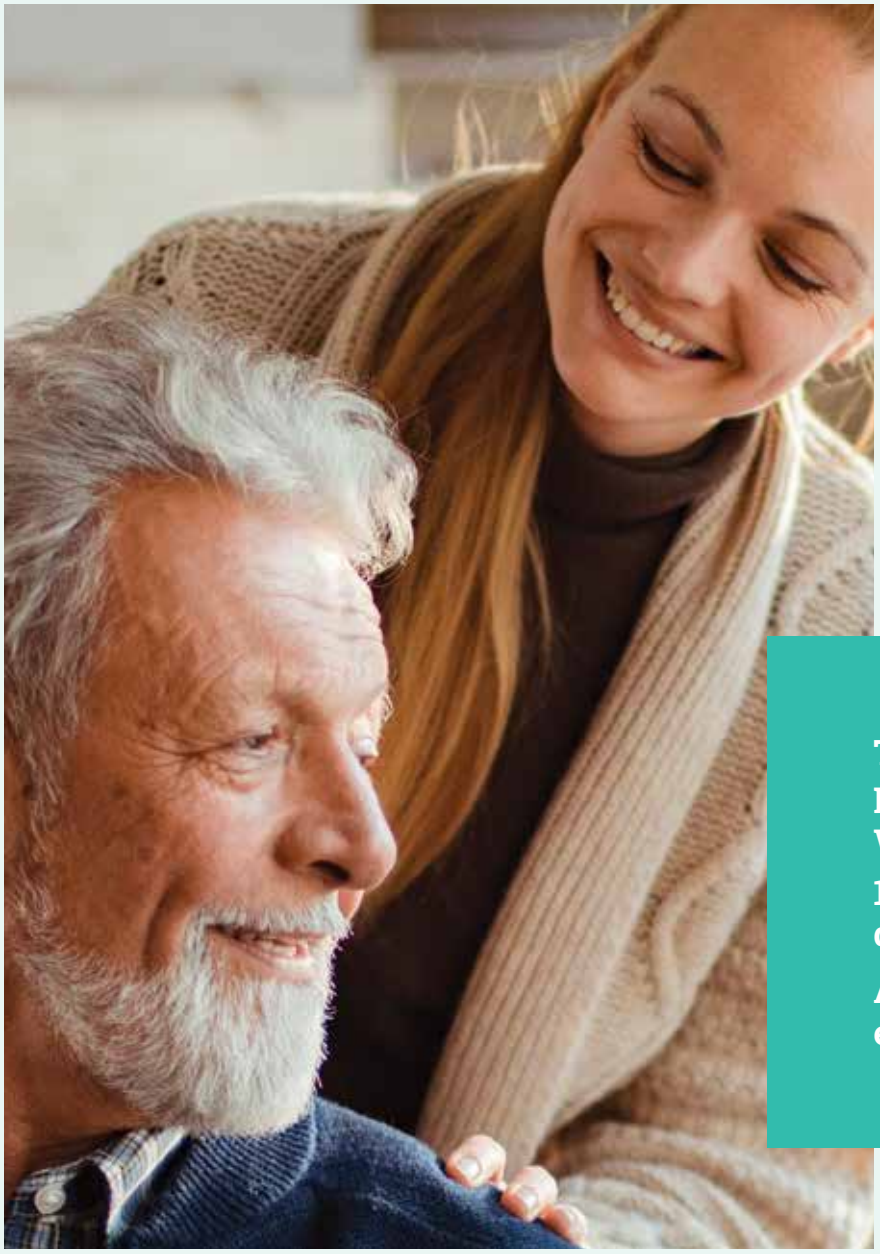
3 https://alzheimers.org.nz/explore/facts-and-figures/

4 Competition and Markets Authority. (2017) Care homes market study: summary of final report [online]. Available at https://www.gov.uk/government/publications/care-homes-market-study-summary-of-final-report/care-homes-market-study-summary-of-final-report (Accessed 5 May 2021).

5 Centers for Disease Control and Prevention, National Center for Health Statistics. (2015) Nursing Home Care [online]. Available at https://www.cdc.gov/nchs/fastats/nursing-home-care.htm (Accessed 5 May 2021).

The difficulties of pain assessment and management in aged care

For older adults, pain is a common — sometimes daily — occurrence. This portion of the population is more likely to have pain problems than their younger counterparts, and chronic pain is also more prevalent amongst this cohort. Findings from Painaustralia suggest that as many as 80% of aged care residents are living with chronic pain, ranging from common arthritis, bone and joint disorders, cancer and other long-term illnesses. In addition, more than half have dementia and 67% require high-level care to manage behaviour[6].



There are over 50 million people worldwide living with dementia.

10 million cases are detected each year.

A new case diagnosed every 3 seconds.

Despite this, pain is often poorly identified and managed in older adults living in long term care facilities. As a result of historically poor identification of pain in people living with dementia, unintentional inappropriate prescribing has taken place. Such as the use of psychotropics to manage behaviour changes in people living with dementia. However, unrecognised pain can contribute to the distress of a person living with dementia, meaning inappropriate prescribing is commonplace.

A study conducted in the UK by the Department of Health found that out of 180,000 prescriptions of antipsychotics for people living with dementia, 140,000 were inappropriately prescribed. These drugs can bring serious side effects which can have a significant impact on the individual, therefore the use of them should be reserved for instances where pain is confidently ruled out as the cause of that person's distress.

Undetected or poorly managed pain in these residents can lead to unnecessary suffering or missed opportunities for early intervention[7]. Chronic pain has a significant impact on many aspects of a person's life, from deconditioning of the body and a loss of functional independence to psychological changes including depression, anxiety, fatigue and difficulty sleeping[8], and a weakened immune system[9]. Moreover, it may also affect a person's ability to function independently and participate in social activities[10], particularly amongst older people.

As we look to the future, this challenge becomes even more significant. Faced with a growing ageing population, more countries are looking for ways to revamp the long-term care system and further invest in home care. For example, the recent Australian Royal Commission into Aged Care Quality and Safety recommended that high quality dementia and palliative care should be considered core business for aged care providers[11], whilst simultaneously increasing the number of Home Care Packages available[12].

In New Zealand it has been suggested that for every $1 invested into new models of care that might delay entry into residential care, this could result in $6.60 in savings. Hence, as in Australia, substituting community care for residential care is seen as a key strategy for dealing with the ever increasing cost of dementia.

6 Painaustralia. (2019) Aged Care and Pain: if you observe a change, consider pain. Available at: https://www.painaustralia.org.au/media-document/blog-1/blog-2020/blog-2019/aged-care-and-pain-if-you-observe-a-change-consider-pain [online]. (Accessed 5 May 2021).

7 Gallant et al. (2020). Provincial legislative and regulatory standards for pain assessment and management in long-term care homes: a scoping review and in-depth case analysis. Available at: https://bmcgeriatr.biomedcentral.com/articles/10.1186/s12877-020-01758-7 [online]. (Accessed 5 May 2021).

8 eTG Complete. (published November 2012. Amended April 2019] In: eTG complete [digital]. Melbourne: Therapeutic Guidelines Limited; 2020 March

9 Trifirò, G. (2011). Antipsychotic Drug Use and Community-Acquired Pneumonia. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3085099/ [online]. (Accessed 5 May 2021).

10 Achterberg et al. 'Pain in dementia.' Pain Rep 2020; 5: e803.

11 Royal Commission into Aged Care Quality and Safety. (2021) Aged Care Royal Commission Final Report: Summary, p127. Available at: https://agedcare.royalcommission.gov.au/sites/default/files/2021-03/final-report-executive-summary.pdf [online]. (Accessed 5 May 2021).

12 Royal Commission into Aged Care Quality and Safety. (2021) Aged Care Royal Commission Final Report: Summary, p137. Available at: https://agedcare.royalcommission.gov.au/sites/default/files/2021-03/final-report-executive-summary.pdf [online]. (Accessed 5 May 2021).

Pain assessment in individuals living with dementia or Alzheimer's Disease

There are over 50 million people worldwide living with dementia, and 10 million cases are detected each year[13]. The majority of these new cases are detected in those aged 60 and over, and it is estimated that 5% to 8% of this population is living with dementia at any given time[13]. Of the 62,287 people with dementia in New Zealand in 2016, an estimated 30.4% are in long-term care facilities[14].

Identifying and managing pain is challenging, but it is even more challenging in those with dementia or cognitive impairments. The very act of communicating the presence of pain can be difficult, as the individual may have lost the fundamental knowledge of, or the ability to, communicate sensations that may be identified as pain[15]. Instead, these residents may have complex and/or subtle behavioural changes such as restlessness, changes in body language, speech and sleep patterns, appetite and facial expressions, all of which indicate the presence of pain[16]. As many carers are not trained to recognise these subtle indicators, pain behaviours may be misdiagnosed as behavioural and psychological symptoms of dementia (BPSD).

As a result, residents are often prescribed antipsychotics to manage behavioural symptoms, which are often inappropriately prescribed. These are last resort medications, which have serious side effects including increased risk of falls, cerebrovascular effects and mortality — and more importantly, do not address or treat the underlying causes of BPSD[17].

A recently published study from Waikato, New Zealand demonstrated high levels of long-term antipsychotic use and sedative use amongst aged care residents (Etuini Ma'u et al, 2021).[18]

Additional data just published from the care homes in England also suggests that psychotropic medications are being prescribed for residents with dementia for longer than what is recommended by guidelines, for at least one year.[19]

With dementia cases predicted to triple to 170,000 by 2050, carers will face more "unique challenges" as people show the symptoms, the Waikato study said.

It found 133 people – 49 per cent of the residents in the study – were on antipsychotics.

Sedatives were being taken by 60 people, or 22 per cent of residents.

About 15 per cent of residents were on both antipsychotics and sedatives.

Prescriptions were more than a year old on average; the mean was 401 days for antipsychotics and 487 days for sedatives.

13 World Health Organization. (2020) dementia. Available at: https://www.who.int/news-room/fact-sheets/detail/dementia [online]. (Accessed 5 May 2021).

14 Deloitte. (March 2017) Dementia Economic Impact Report 2016 [online]. Available at: https://cdn.alzheimers.org.nz/wp-content/uploads/2021/05/Economic-Impacts-of-Dementia-2017.pdf (Accessed 9 September 2021)."

15 CSIKCL. (2016) Assessment and management of pain in dementia. Available at: https://www.youtube.com/watch?v=tLZyXFxGJr0 [online video]. (Accessed 5 May 2021).

16 Mageit, S. (2020). 'Persistent chronic pain undetected in half of people living with dementia', mobihealthnews. Available at: https://www.mobihealthnews.com/news/emea/persistent-chronic-pain-undetected-half-people-living-dementia [online]. (Accessed 5 May 2021).

17 Alzheimer's Society. (2014) Alzheimer's Society's view on antipsychotic drugs. Available at https://www.alzheimers.org.uk/about-us/policy-and-influencing/what-we-think/antipsychotic-drugs [online]. (Accessed 6 May 2021).

18 bpacNZ Best Practice Guide. https://bpac.org.nz/a4d/resources/guide/guide.asp?page=1

19 Ref: La Frenais F, Vickerstaff V, Cooper C, Livingston G, Stone P, Sampson EL. Psychotropic prescribing for English care home residents with dementia compared with national guidance: findings from the MARQUE national longitudinal study. BJPsych Open. 2021 Sep;7(5).

A Review of Existing Pain Assessment Guidelines and Frameworks

Today, a number of pain assessment tools exist to aid in the detection of pain, from those who can reliably document their own pain levels to those who are unable to self-report pain.

Nurses and carers are integral to ensure the appropriate method of pain assessment is used to inform treatment for these vulnerable populations.

Current guidelines for pain assessment tools

The method of pain assessment used to detect pain in an aged care resident depends first and foremost on their ability to articulate their own pain levels.

In those that can verbalise their pain and those with mild to moderate dementia, self-reporting still remains the gold standard. Both the British Geriatrics Society[20] and Royal Australian College of General Practitioners (RACGP)[21] recommend the use of a Numeric Rating Scale (NRS) or Verbal Rating Scale (VRS).

Assessing pain levels accurately and reliably is a highly complex task involving a number of symptoms and factors. Over the years, there have been a number of developments and progressions in pain assessment — particularly for those suffering from chronic conditions or who have lost the ability to verbalise their pain.

20 Schofield, P. (2018) 'The Assessment of Pain in Older People: UK National Guidelines', Age and Ageing 2018; 47: i1–i22, p.i14 Available at: https://academic.oup.com/ageing/article/47/suppl_1/i1/4944054 [online]. (Accessed 5 May 2021).

21 RACGP. (2020) RACGP aged care clinical guide (Silver Book) 5th edition, p5. Available at: https://www.racgp.org.au/silverbook [online]. (Accessed 5 May 2021).

In patients who are unable to self-report pain, other strategies must be used to infer pain and evaluate intervention. The American Society for Pain Management Nursing (ASPMN)[22] recommends a hierarchy of pain assessment techniques for those with advanced dementia, including:

Be aware of the potential causes of pain in older persons, such as arthritis, lower back pain, musculoskeletal disorders, or neurological disorders. These are common causes of pain and should be given priority during the assessment.
Attempt to self-report. Even if a person has limited verbal and cognitive skills, attempts should still be made to obtain a self-report of pain. These could include a simple yes/no, vocalisations, or gestures such as a hand grasp, head nod, or eye blink.
Observe resident behaviours. There are a number of behaviours recognised as indicators of pain in older adults with advanced dementia. These most commonly fall into one of the following categories: pain-related facial expressions, such as grimacing; vocalisations, such as moaning; body movements, such as rubbing a body part; changes in interpersonal interactions, such as combativeness; changes in activity patterns or routines, such as a shift in appetite; and/or changes in mental status. Behaviour assessment tools can be used to support carers in this area, particularly amongst residents that cannot self report.
Solicit proxy reporting of pain and behavioural or activity changes. Credible proxy reporters should be someone who knows the patient well, such as a close family member, spouse or personal care assistants in a long-term care setting. It is important to note that aged care staff often underestimate pain in aged care residents living with dementia; so other sources of information should be used to accurately detect pain[22].
Attempt analgesic trial. These should be initiated only if behavioural scores indicate the presence of pain, or if pain related behaviours continue after basic needs and comfort measures have been taken in those unable to self-report pain. The goal is to establish whether or not pain is the cause of the behaviours, and all treatments should be monitored closely to verify that pain is the cause of the behaviour identified[22].

22 Herr et al. (2019) 'Pain Assessment in the Patient Unable to Self-Report: Clinical Practice Recommendations in Support of the ASPMN 2019 Position Statement', Pain Management Nursing. Available at: https://pubmed.ncbi.nlm.nih.gov/31610992/ [online]. (Accessed 5 May 2021).

Existing paper-based pain assessment tools and frameworks

Tools for those who are able to self-report:

Numeric Rating Scale (NRS): Regarded as the gold standard of pain assessment in those who can self-report pain. The resident rates the intensity of their pain on a scale of 0 to 10, with 0 being no pain and 10 being the worst pain imaginable.
Attempt to self-report. Even if a person has limited verbal and cognitive skills, attempts should still be made to obtain a self-report of pain. These could include a simple yes/no, vocalisations, or gestures such as a hand grasp, head nod, or eye blink.

Tools for those who are unable to self-report:

Abbey Pain Scale. The Abbey Pain Scale is an observational tool developed by Dr. Jennifer Abbey AM. Users observe the resident in six key areas: vocalisation, facial expression, change in body language, behavioural change, physiological change and physical changes. For each area, a rating is given between 0-3. Once all observations have been made, the user adds up the score and the resulting number indicates the intensity of the resident's pain, where a score of 0-2 = no pain, 3-7 = mild pain, 8-13 = moderate pain and 14+ = severe pain.

Checklist of Non-verbal Pain Indicators (CNPI). CNPI is designed to measure pain behaviours in cognitively impaired older adults who are non-verbal. There are six items on the checklist: vocal complaints; non-verbal expression of pain, e.g. moans, groans; facial grimaces and winces; bracing restlessness; rubbing, and vocal complaints; verbal expression of pain using words, e.g. ouch, stop or that's enough. Each item is scored at movement and at rest, with a score "0" if the behaviour is not present and "1" if the behaviour occurs even briefly. The scores are subtotalled for both columns, and added together to get a total score. The higher the score, the greater the likelihood that the resident is in pain.

Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC and PACSLAC-ii). PACSLAC is an observational pain assessment tool specifically designed to help qualified carers and nurses assess pain in people with dementia who have limited ability to verbalise their pain. PACSLAC is the most comprehensive of all manual, paper-based observational tools[23], and includes a checklist of 60 items in five subscales. PACSLAC-ii is an abridged version of the checklist with 31 items and six subscales: facial expressions; verbalizations and vocalisations; body movements; changes in personal interactions; changes in activity patterns and mental state changes. Carers observe these behaviours as present or absent in the resident, then add up those that are present to get a total score. Higher scores imply more pain.

Pain Assessment in Advanced Dementia Scale (PAINAD). PAINAD is an observational pain assessment tool designed to detect pain in those with advanced dementia. The carer observes the resident during activity/with movement for 3-5 minutes before scoring behaviours on a scale of 0 to 2 in five domains: negative vocalisations, body language, breathing (independent of vocalisation), facial expression, and consolability. Pain is indicated by total scores above 2.

23 Natavio et al. (2020) A Comparison of the Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC) and Pain Assessment in Advanced dementia Scale (PAINAD)', Pain Management Nursing. Available at: https://www.sciencedirect.com/science/article/pii/S1524904220301156 [online]. (Accessed 5 May 2021)

Frequency of pain assessments

Regular assessments conducted using specialised pain assessment tools have been found to result in reduced pain, more frequent pain assessment, and improved pain management practices (including the appropriate prescribing of medications). Nursing staff who regularly conduct pain assessments also report lower stress and burnout levels, and benefit from improved communication with physicians[24].

There is no universally accepted guideline for the number of pain assessments that should be conducted amongst aged care residents, regardless of whether they can or cannot self-report their pain. However, all guidelines provided by key societies and associations in the UK, US, Canada and Australia recommend that pain should be routinely assessed, reassessed, and documented in all aged care residents to effectively facilitate treatment, manage symptoms, and support communication among clinicians[25].

For example, the RACGP[26] recommends aged care residents are assessed for pain at the following points:

- At initial intake/admission to services
- For an older adult with behavioural symptoms suggestive of pain, assess at least every 8 hours
- Any time a change in pain status is reported
- One hour following a pain intervention to assess effectiveness
- For older adults residing in long term healthcare settings, assessments should be completed at each quarterly review

These assessments should include input from the resident, family, facility staff, carers, other specialist medical practitioners and/or allied health professionals as appropriate. The RACGP advises that regular reassessment is required to determine changes and the effects of interventions.

Consistency and congruency across all carers and residents is also key when conducting pain assessments. The British Pain Society advises that once a suitable scale has been identified, frequent ongoing assessments should be undertaken using the same tool to evaluate the effects of interventions over time[27]. Furthermore, people with moderate to severe dementia, cognitive impairments, or other severe communication problems should be offered additional assistance with suitably adapted scales and facilitation by skilled professionals.

24 Gallant et al. (2020). Provincial legislative and regulatory standards for pain assessment and management in long-term care homes: a scoping review and in-depth case analysis. Available at: https://bmcgeriatr.biomedcentral.com/articles/10.1186/s12877-020-01758-7 [online]. (Accessed 5 May 2021).

25 Herr et al. (2019) 'Pain Assessment in the Patient Unable to Self-Report: Clinical PracticeRecommendations in Support of the ASPMN 2019 Position Statement', Pain Management Nursing. Available at: https://pubmed.ncbi.nlm.nih.gov/31610992/ [online]. (Accessed 5 May 2021).

26 Recommendations for the use of PAINAD from geriatricpain.org/painad which Prof Keela Herr is the lead.

27 Schofield, P. (2018) 'The Assessment of Pain in Older People: UK National Guidelines', Age and Ageing 2018; 47: i1–i22, pi10. Available at: https://academic.oup.com/ageing/article/47/suppl_1/i1/4944054 [online]. (Accessed 5 May 2021).

PainChek® Universal: creating a new standard for pain assessment

Advancements in technology are paving the way for a new standard of pain assessment, driven by objectivity and automation. PainChek® builds upon existing pain assessment tools, using AI and smart-automation to allow point of care pain assessment using a smart-device. Connectivity to care management systems allows real-time updates of clinical data completing an intelligence driven pain assessment process.

This technology is now available as part of the PainChek® Universal Pain Assessment Solution, a complete point-of-care tool that combines the existing PainChek® app with the Numeric Rating Scale (for people able to self-report their pain) to enable best practice pain management for verbal and non-verbal adult patients across a range of clinical settings.

For the purpose of this chapter, the focus has been placed on paper-based pain assessment tools as they are most commonly used in long-term care services around the world. Chapter 4 goes into further detail regarding PainChek® Universal, digital pain assessment technology, and its place in the future of aged care.

Challenges and Limitations of Paper-based Pain Assessment Methods

Despite the existence of over 30 observational pain assessment tools for use in people with dementia and cognitive impairment there is no gold standard. There's variability in content and scoring systems of the different tools, and in the evidence of their reliability, validity and clinical utility[28]. These tools are paper-based and documentation results into patients' notes often occurs away from the point of care, introducing the risk of recall bias. Further, many require specialist nursing knowledge and training[29].

Time constraints, heavy workload, lack of resources, resistance to change by nursing staff, lack of management support, communication breakdown across professions, and communication difficulties between residents and nursing staff regarding pain have all been identified as barriers[30] to implement consistent and standardised pain assessment protocols across providers and carers.

Of these, some of the main challenges that have emerged include:

These types of behavioural ratings are subjective

The subjective nature of pain makes quantification difficult, yet many clinicians rely upon observations and measures to assess and infer the pain experienced by other people.

Many modern pain assessment frameworks do not adequately tackle this problem, as they do not delineate how different forms of assessments relate to the subjective experience of pain. As a result, on any given scale, one carer may interpret cues differently to another, leading to inconsistency on pain assessment and subsequent management.

28 Lichtner et al. (2014) Pain assessment for people with dementia: a systematic review of systematic reviews of pain assessment tools. BMC Geriatr 14, 138. https://doi.org/10.1186/1471-2318-14-138)

29 (Jonsdottir & Gunnarsson (2021)

30 Gallant et al. (2020). Provincial legislative and regulatory standards for pain assessment and management in long-term care homes: a scoping review and in-depth case analysis. Available at: https://bmcgeriatr.biomedcentral.com/articles/10.1186/s12877-020-01758-7 [online]. (Accessed 5 May 2021).

Familiarity with the patient is important when assessing pain

Guidelines from the British Pain Society, recommends that pain assessment in residents with dementia should include insights from familiar carers and family members, as pain behaviours may differ between individuals[31]. This is because they are the individuals that are most able to pick up on changes in behaviour.

However, it is important to note that in care homes, there are often multiple staff members caring for a single resident, including those who are unfamiliar with the individual. As a result, residents may receive a variety of different pain assessments throughout an average week, and these carers may not contact other parties to obtain personalised insights on pain-related behaviours.

It is important to note that in care homes, there are often multiple staff members caring for a single resident, including those who are unfamiliar with the individual.

Assessing pain manually requires specialised knowledge which is hard to access

These pain assessment tools require nurses to have a certain level of experience and confidence to use the tool.

A study from Canada published last year in BMC Geriatrics found that education is often necessary in pain assessment practices, given there are well-documented knowledge gaps and most tools require specialized knowledge[32]. Findings reveal that pain assessment knowledge increases and pain practices improve among nursing staff following in-person or video-based training programs[32]. However, these are not typically provided in professional training programs for carers.

31 Schofield, P. (2018) 'The Assessment of Pain in Older People: UK National Guidelines', Age and Ageing 2018; 47: i1–i22, p.i15 Available at: https://academic.oup.com/ageing/article/47/suppl_1/i1/4944054 [online]. (Accessed 5 May 2021).

32 Gallant et al. (2020). Provincial legislative and regulatory standards for pain assessment and management in long-term care homes: a scoping review and in-depth case analysis. Available at: https://bmcgeriatr.biomedcentral.com/articles/10.1186/s12877-020-01758-7 [online]. (Accessed 5 May 2021).

Additional challenges of pain assessment in aged care

- There are capability gaps in understanding pain assessment for residents experiencing dementia and cognitive impairment.
- Clinicians can at times struggle to differentiate dementia behaviours compared to underlying pain behaviours.
- Pain assessment is fragmented with various scales, tools and reporting.
- Documentation of historical pain assessments is poor. Often, carers will conduct a pain assessment on a resident, make observations, then sit down at the end of the shift to write notes for the subsequent shift — creating inefficiencies in care planning and effective communication with clinicians.

Limitations of existing paper-based pain assessment tools and frameworks

Pain assessment tool	Numeric/Verbal Rating Scale	Abbey Pain Scale	CNPI	PACSLAC and PACSLAC-ii	PAINAD
Benefits	Easy to use. Self-reporting tool, which is regarded as the gold standard for pain assessment. Suitable for use in both young and cognitively intact adults.	Suitable for patients with dementia who cannot verbalise their pain. Fairly quick to complete compared to other paper-based pain assessment tools. The tool is comprehensive and includes all six pain behaviour categories in the AGS Persistent Pain Guidelines. Has cut-offs for different pain intensities (none, mild, moderate and severe).	Suitable for adults who have severe cognitive impairment and are non-verbal.	Good inter-rater reliability. Helpful in assessing pain in those who cannot self-report pain. The tool is comprehensive and includes all six pain behaviour categories in the AGS Persistent Pain Guidelines.	Helpful in assessing pain in those who cannot self-report pain.
Limitations	Not able to be used in those who cannot self-report pain, such as those with moderate to severe dementia. Uni-dimensional providing only information on pain intensity, and not the impact on pain.	Reliant upon the carer's interpretation of what the patient is experiencing[33].	Only correlates with a Verbal Descriptive scale during movement[34]. Low internal consistency[35]. Has poor psychometric qualities and requires further testing[36]. The tool includes only three of the six pain behaviour categories in the AGS Persistent Pain Guidelines.	Requires more testing in larger scale studies[37]. Reliant upon the carer's interpretation of what the patient is experiencing[33].	Has a high false positive rate. Has low specificity for pain (62%)[38] resulting in a high volume of false positives. Reliant upon the carer's interpretation of what the patient is experiencing[33].

33 Brown, D. (2011). 'Pain Assessment with Cognitively Impaired Older People in the Acute Hospital Setting'. Reviews in Pain. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4591671 [online]. (Accessed 5 May 2021).

34 A psychometric evaluation of three pain rating scales for people with moderate to severe dementia P9

35 Ersek et al. (2010). 'Comparing the Psychometric Properties of the Checklist of Nonverbal Pain Behaviors (CNPI) and the Pain Assessment in Advanced dementia (PAIN-AD) Instruments', Pain Med. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2866060/ [online]. (Accessed 5 May 2021).

36 Neville, C., Ostini, R. (2014). 'A psychometric evaluation of three pain rating scales for people with moderate to severe dementia', Pain Management Nursing, 2014 Dec;15(4), p10. Available at: https://pubmed.ncbi.nlm.nih.gov/24144573/ [online]. (Accessed 5 May 2021).

37 Schofield, P., Abdulla, A. (2018). 'Pain assessment in the older population: what the literature says' Age and Ageing 2018; 47: 324–327. Available at: https://pubmed.ncbi.nlm.nih.gov/29584807/ [online]. (Accessed 5 May 2021).

38 Pain assessment in the older population: what the literature says.

Place of PainChek® Universal in Pain Assessment in Aged Care

There are a number of limitations with current pain assessment tools and frameworks. However, the widespread availability of digital technology has opened a plethora of possibilities regarding pain assessment for residents living with dementia. One of these tools is PainChek® which took the availability of technology and enriched its capabilities by employing artificial intelligence (AI) to detect facial expressions indicative of pain, and smart automation to allow user entry of observed non-facial pain behaviours.

PainChek® Universal is a clinically validated, combination pain assessment tool that supports accurate and rapid pain assessment at the point of care. The tool combines the leading PainChek app with the Numeric Rating Scale (NRS) to enable best-practice pain management.

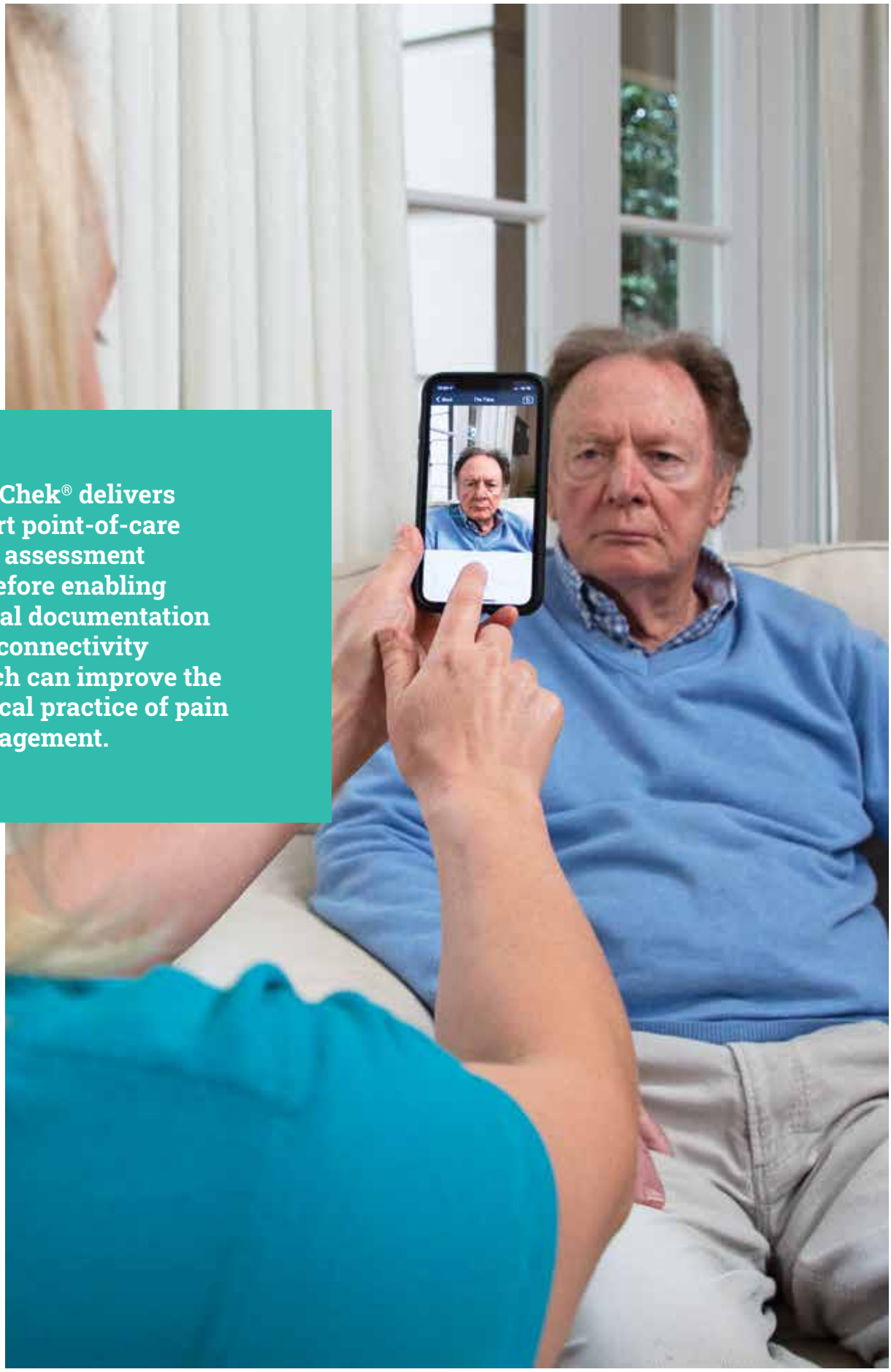
	Easy to use for all care givers	Clinically validated	Regulatory cleared	In line with guidelines for cognitively impaired	Point of care and integrated	Real-time capability	Artificial intelligence	Connectivity with other platforms
PainChek®	✔	✔	✔	✔	✔	✔	✔	✔
Existing manual tools	✘#	✔	✘	✔	✘	✘	✘	✘

#Manual tools refers to observation pain assessment tools

PainChek® app: giving a voice to those who cannot verbalise their pain

PainChek® automates the pain assessment process improving the clinical practice of pain management, and empowers all carers to deliver accurate pain assessment using their smartphone.

PainChek® is a hybrid tool that has intelligently automated the multidimensional pain assessment process and introduced artificial intelligence to assist in facial assessment, which is the most complex and subjective part of the pain assessment process. Using PainChek®, carers use their smartphone camera to allow the automated facial recognition and analysis to observe the individual's face. This then analyses the images (without storing) in real-time and automatically recognises the facial muscle movements that indicate pain.



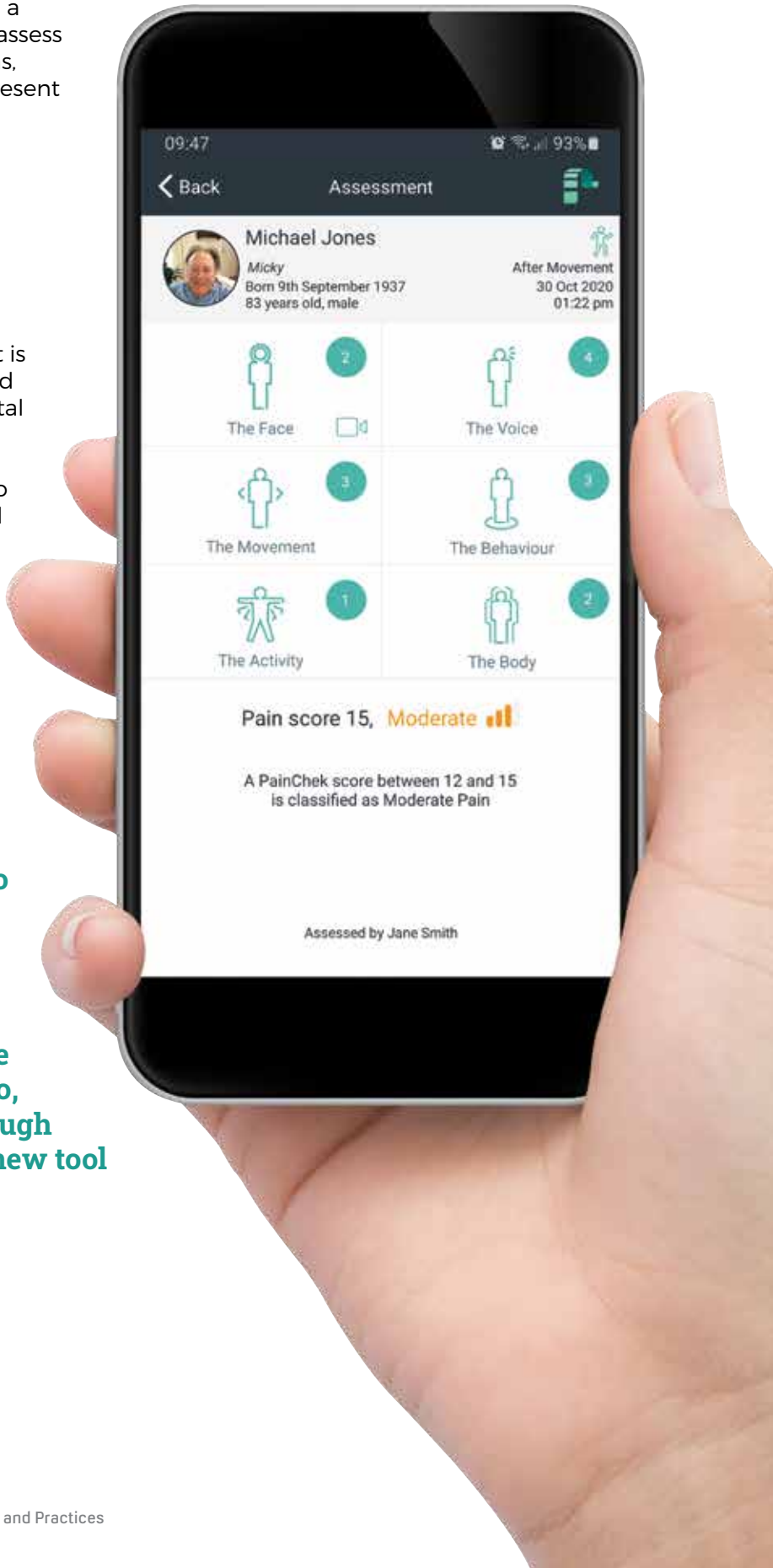
PainChek® delivers smart point-of-care pain assessment therefore enabling digital documentation and connectivity which can improve the clinical practice of pain management.

Next, the caregiver is guided through a series of five digital checklists which assess the remaining five non-facial domains, with each pain indicator scored as present or absent:

- **Vocalisation** (9 items)
- **Movement** (7 items)
- **Behavioural change** (7 items)
- **Changes in activity** (4 items)
- **Physical change** (6 items)

The data is housed on the device, but is also stored centrally via the cloud, and documented into the PainChek® portal and client care management system which eliminates the duplication of data entry and allows the caregiver to monitor the effect of medication and other pain treatments over time.

Based on indicators present (scored as 1) across all six domains, PainChek® automatically calculates an overall pain score and assigns a pain intensity level ranging from No Pain (0-6 indicators), Mild (7-11 indicators), Moderate (12-15 indicators), or Severe (16-42 indicators).



"The Abbey Pain Scale has been the standard tool used to overcome that problem for nearly 20 years in Australia and elsewhere. PainChek® introduces an innovative technology that does far more than the Abbey Scale could do, whilst remaining similar enough to allow staff to adapt to the new tool without difficulty."

Dr. Jennifer Abbey AM,
Founder of the Abbey Pain Scale.

Driving consistency and objectivity in every pain assessment

Unlike other tools that rely solely on subjective observations from the carer, the PainChek® app partially automates pain assessment using facial analysis technology. This assesses micro-expressions on a person's face that are often not detected by clinical staff. The data is then combined for observed behaviours inputted by the user to confirm the presence and intensity of pain.

To ensure consistency between users, PainChek® utilises a binary scoring system where indicators are either present or absent. This differs from scales like the Abbey Pain Scale and PAINAD, where the user has to adjudge the intensity of the behaviours present. Furthermore, all indicators have been defined, and these definitions appear beside the indicator in the app accessible by an information button. These measures are introduced in PainChek® to minimise user subjectivity when assessing pain indicators.

Access to training and eLearning

The facial assessment component in the PainChek® app is completely automated, and the steps can be followed by any carer or family member using the tool. For other indicators, which often require more specialist knowledge, PainChek® provides a number of training resources to address any knowledge gaps in pain assessment.

As pain assessment increases, so too do pain practices amongst nursing staff. Recognising this, PainChek® delivers training remotely and has conducted more than 3,000 virtual workshops to aged care providers across Australia alone as a result of a robust train-the-trainer program. The platform also includes an online learning curriculum, which enables more than 4,400 aged care clinicians to access on-demand training any time, anywhere.

PainChek® is able to detect pain with 95.0% accuracy, 96.1% sensitivity and 91.4% specificity in those who cannot verbalise pain. These results support the clinical usefulness of the tool when identifying pain in patients with moderate–severe dementia[39].

39 Hoti, K., Atee, M., Hughes, JD. (2017). 'Clinimetric properties of the electronic Pain Assessment Tool (ePAT) for aged-care residents with moderate to severe dementia', Journal of Pain Research » Volume 11. Available at: https://www.dovepress.com/clinimetric-properties-of-the-electronic-pain-assessment-tool-epat-for-peer-reviewed-fulltext-article-JPR [online]. (Accessed 5 May 2021).

Numeric Rating Scale: documenting the scores of those who can self-report

The Numeric Rating Scale (NRS) is regarded as the gold standard of pain assessment in those who can self-report pain. Using the NRS function within PainChek® Universal, carers can record residents' self reported pain scores between 0 and 10, where "0" represents no pain at all and "10" represents the worst pain imaginable.

Access to all pain assessment records in one tool

NRS results have typically been manually transcribed by care staff, which can be time-consuming and difficult to store — not to mention, historical data can quickly disappear, which creates inefficiencies in care planning and effective communication with clinicians.

PainChek® Universal combines pain assessment for those who can verbalise their pain along with those who can't. By combining the benefits of the two pain scales into one universal pain assessment solution, PainChek® Universal simplifies and streamlines pain assessment procedures and ensures consistency in results across all carers and residents.

PainChek® Universal: A combined solution for those whose ability to communicate fluctuates

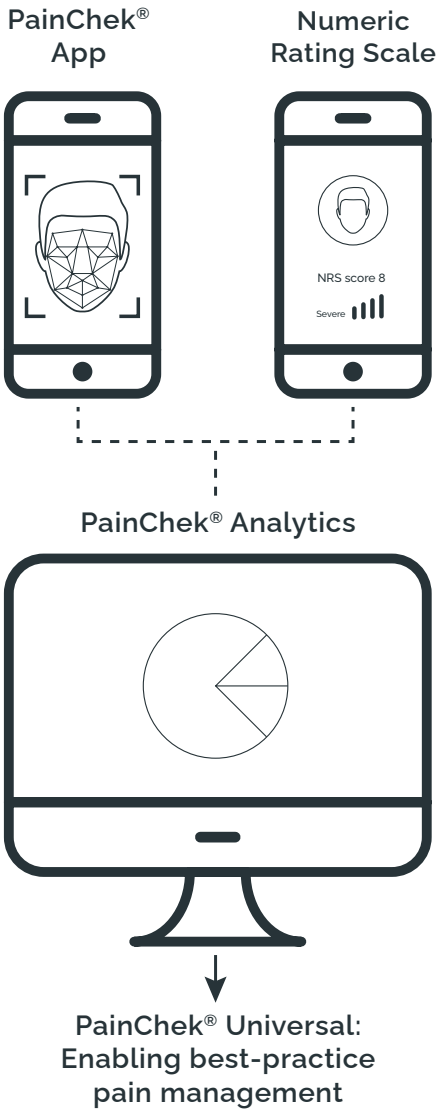
There are times when an aged care resident's ability to reliably communicate the severity of their pain will fluctuate, with causes ranging from acute delirium brought on by a urinary tract infection, to the impacts of psychotropic medications. In these, and other scenarios, residents may require access to both PainChek® and NRS over the course of a day, or even an hour.

PainChek® Universal combines the PainChek® pain assessment process with the NRS in one single tool, enabling carers to document the pain scores of residents directly within the app and access a resident's pain history with ease.

Ensuring pain assessment is delivered at the point of care

According to Herr et al., behavioural observation in pain assessment should occur during activity whenever possible, or post-movement. This is because pain indicators are often minimal or absent when a resident is at rest[40].

PainChek® Universal supports carers to deliver pain assessment on residents at the point of care using their smartphone or tablet, as well as access the resident's historical pain assessment scores.



40 Herr et al. (2019) 'Pain Assessment in the Patient Unable to Self-Report: Clinical Practice Recommendations in Support of the ASPMN 2019 Position Statement', Pain Management Nursing. Available at: https://pubmed.ncbi.nlm.nih.gov/31610992/ [online]. (Accessed 5 May 2021).

Reduced reliance on psychotropics

A recent study conducted by Dementia Support Australia[41] found that non-drug treatments for people with dementia in nursing homes deliver significantly better outcomes for challenging behaviours than pharmacological interventions.

According to the findings from the world-first study[42], almost all behaviours and psychological symptoms of dementia (BPSD) could be helped by non-pharmacological treatments and were side-effect free. Approximately only 10% of antipsychotics prescriptions are appropriate in aged care residents living with dementia.

The study then noted that the main reasons residents weren't provided with appropriate non-pharmacological therapies were a lack of investment in care staff and a lack of understanding of dementia by medical professionals.

In particular, pain is often the underlying cause of BPSD but often goes undetected and is therefore poorly managed due to difficulties that people with dementia have in communicating pain. PainChek® enables a timely and comprehensive assessment of pain in people living with dementia. In identifying and quantifying pain, PainChek® facilitates clinicians to make decisions on treating the cause of BPSD, and therefore helps them avoid inappropriate prescribing of antipsychotics.

PainChek® facilitates clinicians to make decisions on treating the cause of BPSD, and therefore helps them avoid inappropriate prescribing of antipsychotics.

41 Lunn, S. (2021). Non-drug care 'much better for dementia', The Australian. Available at: https://www.theaustralian.com.au/science/nondrug-care-much-better-for-dementia/news-story/1533e695536584912e531c8a966ee4bb [online]. (Accessed 5 May 2021).

42 https://www.alzheimers.org.uk/about-dementia/treatments/drugs/antipsychotic-drugs

CASE STUDY

PainChek® was shown to instigate a reduction in the use of psychotropic medication through identifying pain as a cause of challenging behaviour.

A male resident arrived at the facility following a two-month hospital stay due to a fractured shoulder. The resident exhibited extremely agitated and aggressive behaviour, whereby facility staff felt that he was a risk to other residents. Staff felt that they did not have the capacity to care for him, prompting referral to a specialist dementia unit.

The gentleman did not have a pain management program upon arrival to the facility. Due to the behaviours he was exhibiting, a PainChek® assessment was undertaken. The assessment highlighted that the resident was experiencing severe pain.

Staff discussed this finding with the resident's GP who initially increased the resident's risperidone dosage and administered a 5mg dose of naloxone/oxycodone. This resulted in the resident becoming excessively drowsy to the extent that he was unable to eat. The GP subsequently removed the analgesia, however, this resulted in the resident's exacerbated behaviours returning. The GP then removed the psychotropic medication and focused on managing the gentleman's pain. Staff reported that the resident was a "different person", with a severe reduction in agitation.

The gentleman did not have a pain management program upon arrival to the facility. Due to the behaviours he was exhibiting, a PainChek® assessment was undertaken.

The assessment highlighted that the resident was experiencing severe pain.

Staff reported that the resident was a "different person", with a severe reduction in agitation since his pain was managed.

PainChek® Analytics: Informing best-practice pain management

PainChek® Universal includes pain scores generated from both PainChek® and the NRS in one solution. In turn, this generates significant data on pain assessment outcomes and activity at individual, facility and group levels, which providers can harness to inform medical decisions on pain management.

Supporting repeat assessments

According to the RACGP, acute pain may occur concurrently with chronic pain, and should be investigated and treated accordingly. For chronic pain in particular, the identification of pain patterns can help to establish a treatment regimen[43] — however, this depends on carers first being able to identify said patterns.

All resident records are stored securely and centrally via the cloud, and documented in PainChek® Analytics. This allows the caregiver to monitor the effect of medication and other nonpharmacological treatments over time.

Simplification of record-keeping and documentation

PainChek® Universal enables providers to demonstrate compliance and support funding claims with one-click access to all historical pain assessment records in one place.

Via a tailored dashboard, clinicians and facility managers have access to a number of data points at their fingertips, including:

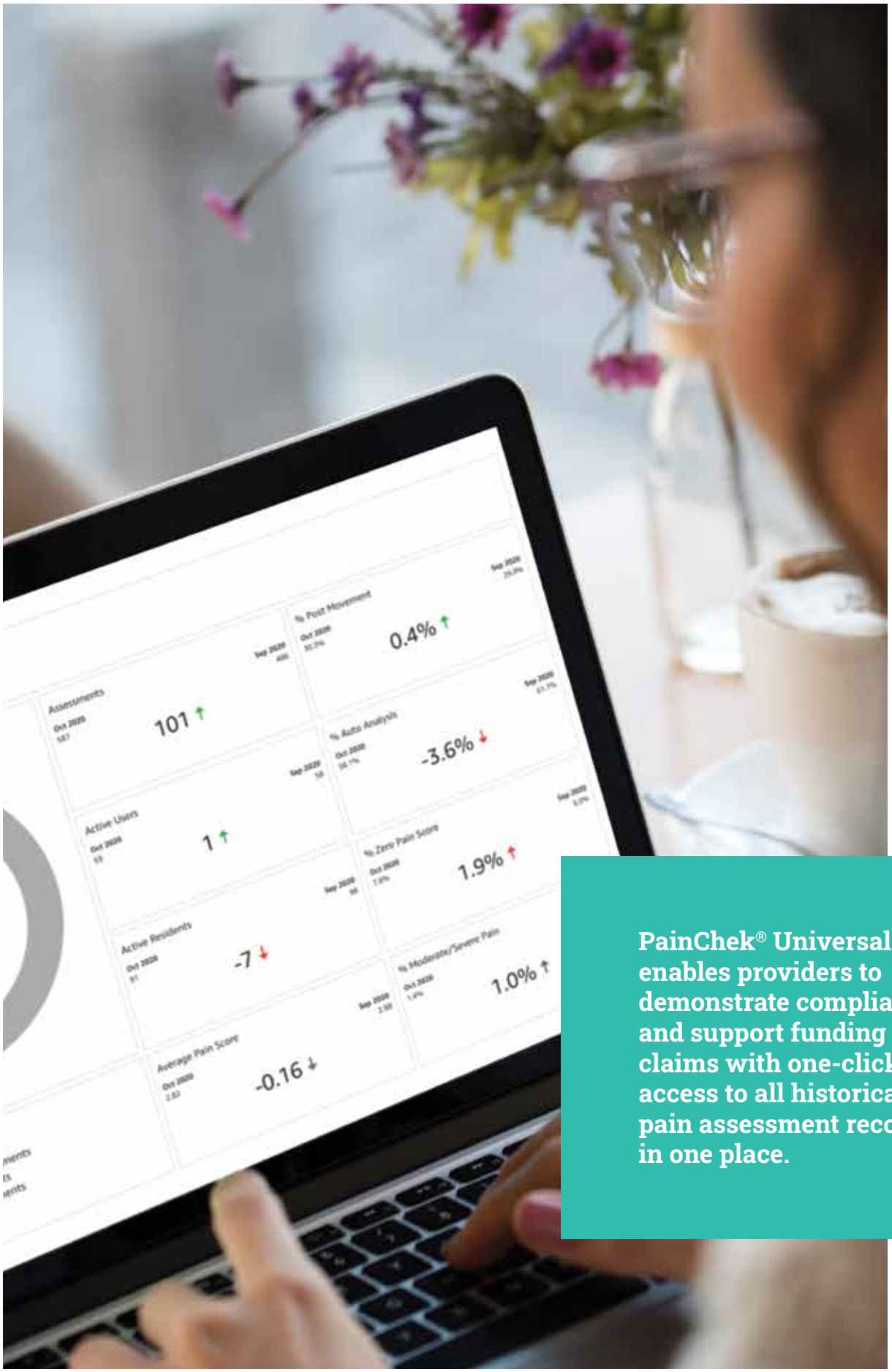
- How pain assessments are being conducted
- Frequency of pain assessments
- Pain assessment history
- Key assessment indicators
- Top-performing facilities
- Top power users within an organisation

"PainChek® enables easy record-keeping which can be integrated with existing software record systems. It provides accountable and clear record-keeping and evidence availability for staff, GPs and for auditing purposes.

From a funding perspective, PainChek® offers an evidence-based process that allows operators to meet the requirements of the current Aged Care Funding Instrument (ACFI) model across several domains."

Ciaran Foley, CEO of Allambie Heights Village in Australia

43 RACGP. (2020) RACGP aged care clinical guide (Silver Book) 5th edition, p2. Available at: https://www.racgp.org.au/silverbook [online]. (Accessed 5 May 2021).

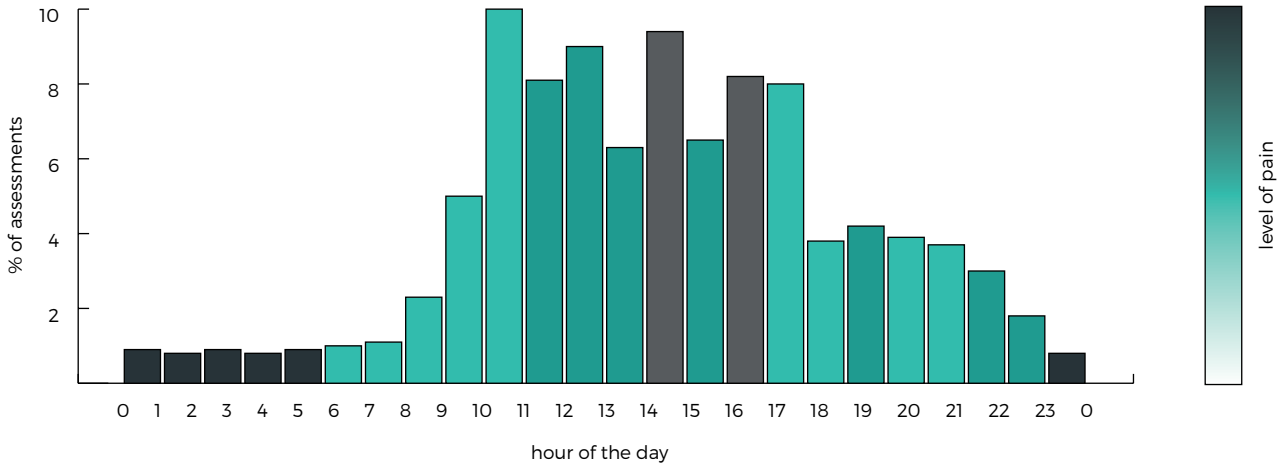


PainChek® Universal enables providers to demonstrate compliance and support funding claims with one-click access to all historical pain assessment records in one place.

PainChek® Analytics isn't just a useful resource to have at a resident level — it's also invaluable at the facility and provider level. Pain data can help clinical leaders and carers continuously improve how pain assessment is undertaken, particularly in those who cannot verbalise their pain, and is critical for:

- Identifying trends in pain assessment delivery
- Tracking pain levels over time
- Flagging pain outcomes and risks
- Following up response to pain interventions

Take, for example, facility-level data from when pain assessments occur:



Mapping the time and number of pain assessments against the pain scores of residents provides macro-level insights into pain levels and trends throughout the day. In the example above, we can see that most assessments at this facility are conducted during the day, with the highest number of assessments occurring between 9am and 10am.

The other notable aspect of this graph is the percentage of pain assessments that returned a moderate or severe pain rating. This is demonstrated by the colour: the darker the colour, the more moderate to severe pain assessments occurred in that hour.

What is evident here is that while far fewer pain assessments occur during the night, those assessments typically identify higher levels of pain. A provider reviewing this data could draw the conclusion that pain is an underlying factor for restlessness or disrupted sleep patterns, and that appropriate pain treatment methods need to be administered in the evening.

Going even further to the data at a facility level, clinicians can see when pain assessments occur during shifts, or even at an individual resident level. Based upon this information, a carer can identify any trends of pain in a resident over any given day and tailor the treatments accordingly.

Ensuring compliance with national standards

Use of PainChek® Universal facilitates pain assessment and management practices, and documentation: and therefore assists stakeholders in ensuring compliance with national standards.

Australia	United Kingdom
PainChek® supports Royal Commission recommendations and ACQSC Quality Standards. PainChek® technology and training increases quality outcomes within current clinical resources. Identifying previously undetected pain helps to reduce the need for chemical restraint and antipsychotic medications. PainChek® has an intuitive interface and workflow which allows for broader use across the aged care workforce. Potential facilitator for people to remain at home on a lower package with access to PainChek®.	PainChek® supports an outstanding rating in several "Effective" assessment criteria within the UK's Key Lines of Enquiry (KLoE). **E1:** PainChek® helps ensure there is a truly holistic approach to assessing, planning and delivering care and treatment to all people who use services, including pain relief needs. **E2:** PainChek® Universal allows all staff to be actively engaged in activities to monitor and improve quality and outcomes in residents using PainChek® Analytics. **E3:** All staff receive training and access to ongoing learning, in order to ensure high-quality care. **E4:** Access to historical resident data empowers teams to work collaboratively and efficiently to deliver more joined-up care to people who use services.

PainChek® is driving the shift towards ongoing assessment and planning of care with residents through embedding point of care clinical assessments.

Enabling best practice pain management

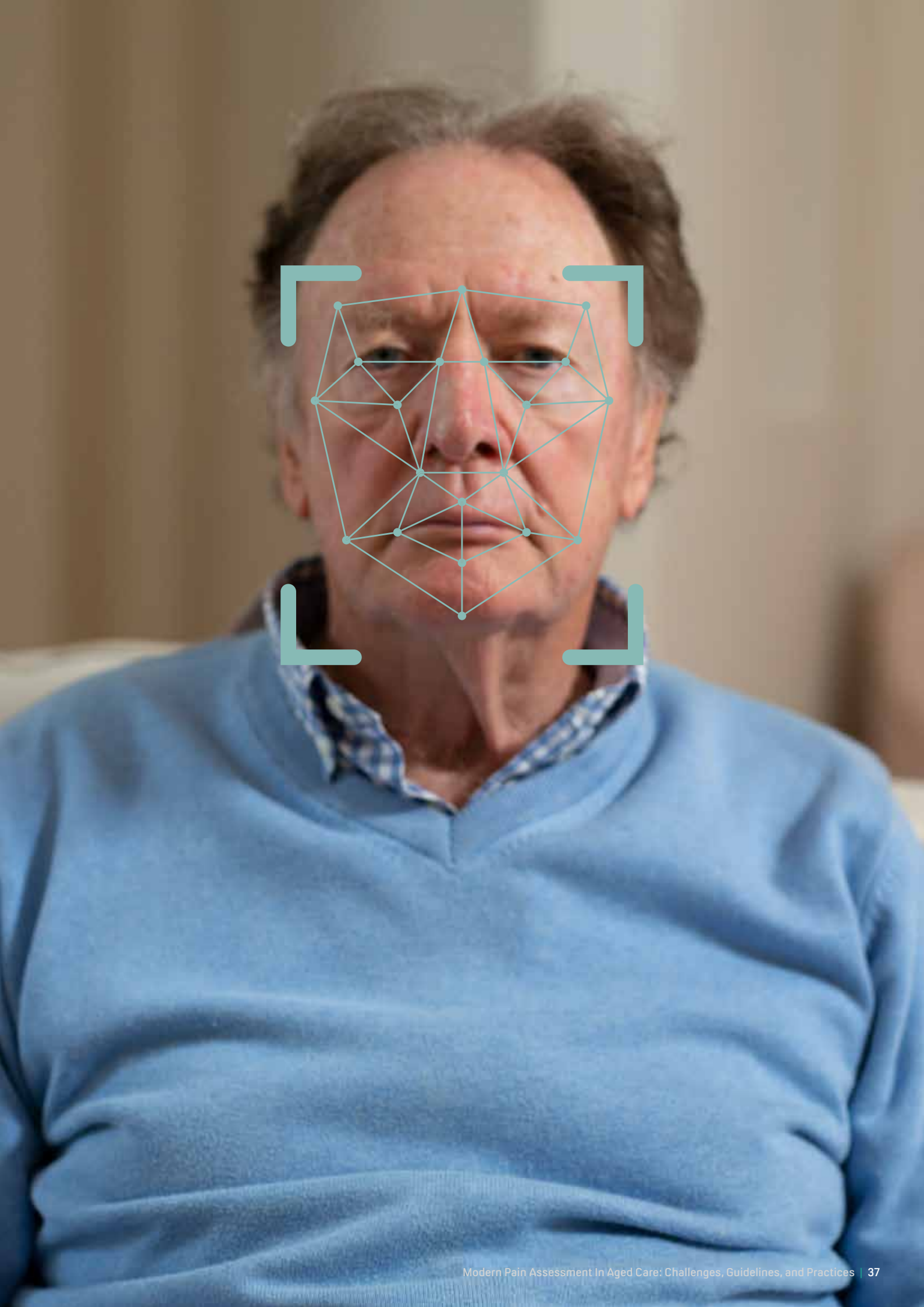
There are a number of well-established, well-validated paper-based pain assessment tools and frameworks to assess pain in those who can, and cannot self-report their pain.

However, as outlined in this whitepaper, there are limitations to each of these pain assessment tools — as well as broader challenges in pain detection and management within the aged care industry as a whole.

PainChek® Universal addresses these limitations with a complete point-of-care digital tool that can enable all carers and clinicians to better assess pain. This can lead to:

- Greater awareness and capability to identify pain behaviours associated with dementia through extensive staff training.
- More prominent, regular, and multidisciplinary pain assessments, often involving pharmacists, GPs, physiotherapists, and Dementia Behaviour Management Advisory Service (DBMAS).
- A reduction or limitation in the incorrect prescription of antipsychotics, which in turn delivers positive health related outcomes.
- The ability to conduct pain assessments at the point of care using mobile devices.
- Empowerment of care teams through training and facilitation of pain assessment processes and documentation supported by PainChek®'s eLearning module.

With the ongoing development and steady rollout of PainChek® products across the globe, digital pain management systems are poised to supersede traditional paper-based methods of assessment — paving the way for a world where every carer is empowered with the tools and training needed to accurately assess pain and every individual has access to accurate pain assessment and treatment, regardless of their age or ability to verbalise pain.



For more information call **0333 577 3397**
or visit **www.painchek.com/uk**

PCK071 UK

PainChek®
Intelligent Pain Assessment