Centre for Health Services Research
6 November 2024

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NQIP Quality Indicator data aggregation and submission workflow in Residential Aged Care: A Case Study

Overview

The workflow case study described in this document is based on information gathered during a pre-implementation phase, formative evaluation conducted in 2023-2024 by the University of Queensland for the Aged Care Data Compare Plus (ACDC+) Project. The project is funded out of the Digital Health Cooperative Research Centre (DHCRC). A major project aim is to study and improve a care provider's own use of day-to-day data for internal quality measurement, monitoring and improvement initiatives. Consequently, it will also serve to support more comprehensive and accurate reporting for the mandatory National Aged Care Quality Indicator Program (NQIP).

The NQIP program collects information from residential aged care services on eleven quality indicators, every quarter, across critical areas of care that can affect the health and wellbeing of aged care home residents. The program addresses recommendations from the Royal Commission into Aged Care Quality and safety.

This document presents a case study of data collection, aggregation and submission activities carried out by the project's industry partner (a large, for-profit aged care provider) for the NQIP program. The case study is built on information gathered during semi-structured interviews with staff employed by the provider across four organisational cohorts (Governance, Leadership, IT, and Clinical). The accuracy of the interview information was interrogated, clarified and/or updated during a range of internal project forums, routine project meetings, planning workshops, etc. This information was also used to design a pilot implementation at the partner provider organisation with an aim to reduce data collection burden, improve reporting efficiencies, and investigate a number of research questions.

This document has been reviewed and endorsed by the projects research and industry partners.

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Document version information

Version	Date	Version contributors	Notes
1	29/07/2024	Michelle Lang (UQ), Gillian Stockwell-Smith (UQ)	Initial version.
2	06/11/2024	Murray Hargrave (UQ), Michelle Lang (UQ)	This document. Incorporates partner feedback & supersedes previous version.

Introduction

The ACDC+ project seeks to investigate several research questions pertinent to collection, exchange, standardisation, and use of health data in the Australian aged care sector. The mandatory NQIP program acts as the data "use-case" for the purposes of the project. During the project, three pilots (implementations) will be trialled at the aged care provider industry partner to allow research questions to be examined.

One of the pilots is an adjustment of the QI data collection workflow at two homes operated by the provider organisation. The adjustment in workflow is the inclusion of QI data collection, for a subset of NQIP QIs, within the typical, regular assessment of resident status, wellbeing, and needs. This subset of QIs includes Pressure Injuries, Physical Restraint, Unplanned Weight Loss, Activities of Daily Living, Incontinence Care (IAD), and Hospitalisation. Relevant data for this subset is recorded within the clinical management software platform (AutumnCare) used by the provider.

This is a change from the current approach at the partner organisation where data collection for this QI subset occurs in a process somewhat separated from resident assessment workflow (see description in the Case Study Report section, below). The motivations for this pilot included improved efficiencies in data collection, improved data quality, data validation efficiencies at source (Home level), inclusion of NQIP QIs in care practice, and investigation of research questions.

To inform the design of the pilot, a thorough understanding of the QI data collection workflow was sought via interviews of care provider organisation staff. The findings uncovered from these interviews are summarised in this case study report.

The success or otherwise of the pilot will be assessed by follow-up interviews of staff with reference to the following research questions:

- What are the optimal workflow arrangements for data acquisition to support quality improvement?
- How can data acquisition be integrated into day-to-day care delivery?
- What is the data burden for data acquisition in the project implementation compared with current reporting arrangements?
- What are the advantages and disadvantages of various models of data acquisition and dissemination, and QI calculation?
- How can the demands of government and public reporting be harmonised with an internal QI and quality improvement strategy?

Case Study Report

Workflow

The organisation's QI data aggregation and submission process commences at the beginning of a reporting quarter. Elements of data collection occur during routine resident assessment periods (on admission and thereafter three-monthly), others are picked up from daily care documentation, or when specific incidents occur (e.g. falls, behaviour changes, hospitalisations). But the majority of NQIP QI data are collected outside of routine resident assessment periods.

The data aggregation process involves a rolling, monthly sequence of clinical outcome data collection, and workforce change and consumer experience reporting that is synchronised using trackers (word documents) and spreadsheets. QI data collection is distributed across the three months of a financial quarter. Data collection and initial local validation is allocated to a single month (apart from weight, which is collected and recorded for each resident every month). For example, Month 1 is ADL, Month 2 is IAD/Pressure Injuries. The data collection process is followed by two cycles of data consolidation and validation (see Figure 1: NQIP QI data aggregation and submission workflow).

Part A – Data collection

1. Monthly observational audits

a. The audit timetable is set and coordinated at an organisation level by the Quality Team (Corporate Support Team).
   i. The monthly QI process is triggered by a reminder email from the National Quality Assurance Manager to the individual home's Leadership team (General Manager, Clinical Care Manager(s)) to start the data collection process for the designated QI.
   ii. One or more clinical QIs are collected and recorded per month.

b. The audit process is coordinated at a facility level, per individual home, by the clinical leadership team (General Manager, Clinical Care Manager) and conducted by care staff; Registered Nurses (RNs), Enrolled Nurses (ENs) and Assistants in Nursing (AINs).
   i. On the 1st day of the month the Clinical Care Manager (CCM) generates a new global chart (data collection spreadsheet) in an electronic clinical management system (CMS) for selected QIs (e.g. PI and IAD) which is populated with the room numbers and names of the home's residents at that date.
   ii. The ADL QI data collection process requires the generation and downloading of a separate Barthel index assessment form for each resident at the beginning of the month ready for completion by the clinical staff.
   iii. The data collection process is triggered at the home level by an email and/or reminder from the Clinical Care Manager via the organisations Clinical Management System advising Clinical Team Leaders and Registered Nurses of the QIs for the month and a reminder of the process (e.g. location of data recording sheets/resident inclusion/exclusion process).
   iv. The data collection process (clinical QI data on pressure injuries, weight, activities of daily living (ADL), and continence) is completed and/or supervised by the RNs outside of the routine assessment periods via observational audits. Data are recorded on the relevant spreadsheet or in the residents Clinical Care System profile.
   v. All QI data is collected by the third week in the month to allow for local collation and review by the Clinical Care Manager prior to releasing the local data to the National Quality Assurance Manager in the Quality Team (Corporate Support Team) in the fourth week of the month.

See Figure 2

2. Quarterly reports
   a. Additional clinical quality indicators (Hospitalisation, physical restraint, medication management, falls), are entered directly into the organisation's clinical and incident management systems (AutumnCare, BestMed, and RISC-Net).
   b. Staff turnover data is entered into the organisations HR IT platforms (TimeTarget/People Central) by the facilities care staff, leadership team and administration workforce.
   c. The resident experience surveys (Quality of Life, care preferences and expectations) are coordinated by paraprofessional staff (lifestyle coordinators) and entered directly into a standalone survey platform (CarePage).
   d. The facility CCM generates a report from the relevant IT system towards the end of the reporting quarter and checks the reports prior to advising the National Quality Assurance Manager the local data is available for collation.

See Figures 3 & 4.

Part B – Data validation and submission

What follows is a prolonged period of checking and crosschecking to validate the data.

1. The data spreadsheets are checked on site throughout the data entry period (Weeks 1-3). The CCM reviews the data spreadsheets or runs one or more consolidated reports in the Clinical Management System throughout the month to monitor data collection progress. The CCM identifies residents whose data has not been entered and provides RNs with a list for follow up.
2. At the end of the data entry period (Week 4) the CCM conducts a final audit of the data entry forms or runs a consolidated report to identify missing data and missing cases (residents). The CCM conducts a cross check with the Bed Register (an Excel or Word document stored on a local drive) which documents resident admission, discharge, hospital transfer, and social leave dates, to ensure all eligible residents' data are recorded. RNs are alerted to collect and enter any missing cases and/or data.
3. The CCM liaises with the National Quality Assurance Manager (NQAM) at the end of week 4 to advise data completion. Some QIs reports are submitted via the organisations BI Portal and other QIs are accessed by the NQAM directly from the organisations client and administration systems.
4. Preliminary reports for each facility are produced by the Quality Team, with errors noted, and returned to the relevant facility leadership team for follow up.
5. The facility leadership team address errors or missing data and the spreadsheets are resubmitted to the Quality Team for final review and follow up.
6. Once the individual spreadsheets for each QI (n=11) at each facility (n=69) have been confirmed as accurate by the Quality Team, the data is consolidated by facility and uploaded per facility by the Quality Team via the GPMS portal.

The workflow associated with data collection is prolonged and labour intensive. The entire data aggregation and submission process for the eleven NQIP QI takes a minimum of 524 hours per quarter. This equates to a total of 14 FTE *(assuming 1FTE=37.5hrs)****, or approximately 1x 0.8FTE position*** *(5.8hrs/day)* ***for the entirety of 90 days.***

Identified issues & Conclusions

Data workflow burden

Data burden within the organisation is related to: sector IT system immaturity, accommodations for the lack of system interoperability, and internal system variability.

1. Our industry partner has, and continues to, invest heavily in its technology infrastructure, but they are hampered by the fact that the RAC IT vendor sector is slow to adopt leading technology. The outcome is immature systems with poor functionality [1, 2] which are less sophisticated than those in the acute care sector. To compensate, our industry partner has, over time, acquired systems to plug the gaps in their existing systems, resulting in multiple incompatible systems (a seemingly unexceptional situation among providers [3, 4]). They have eleven IT systems overall, eight of which are accessed by clinical and administration staff in the facilities to record the clinical and workforce data used in NQIP QI reporting. Of the eleven systems only two are connected; Epicor, which records enquiries, waitlist, and resident admission/discharge details, and AutumnCare, the clinical management system. See Table 1: NQIP QI data collection systems and processes.
2. The organisations NQIP Quality indicator data sets are compiled using information from multiple systems and, in some cases, the data requires a level of transformation. A lack of IT system connectivity to consolidate and present data reliably and efficiently makes connecting resident data across systems a time consuming, and predominantly manual process resulting in the previously described ‘work arounds’ melding electronic and paper-based systems. At the time of this report, the residential aged care sector does not commonly use a data linkage standard like a statistical linkage key (SLK) or a persistent care recipient identifier (such as the Individual Healthcare Identifier; IHI). Additionally, there is often no field in the aged care sector software systems for such a linkage key or identifier.
3. The Australian residential aged care sector is experiencing high levels of merger and acquisition activity with a general shift of ownership from independent homes or smaller providers to large providers as smaller providers struggle to meet increasing governance and compliance requirements [5, 6]. While this strategy maintains financial viability by improving economies of scale our industry partner has found that it also affects consistency in data collection systems across the organisation. Some recent acquisitions are considerably more paper-based than others creating additional administrative burden at least initially.

Data Integrity

Data integrity and quality is an important consideration for the aged care sector, including data submitted by aged care providers for the National Aged Care Mandatory Quality Indicator Program. There are numerous factors (e.g. workflow, technology, intent and purpose, etc) that can affect the quality and completeness of data collected in residential aged care, and potential data quality issues have been noted in NQIP data in the past [7, 8]. Data collected as part aged care provision underpins decisions and actions related to the business of resident care at a local and organisational level, but also contributes to the big data sets (secondary data) used for industry benchmarking and policy decisions by the Department of Health and Aged Care and Australian Institute of Health and Welfare [7]. It is therefore crucial to understand the process of data collection and entry and also the

barriers to data quality that are experienced by Australian residential aged care providers, e.g. data item inconsistencies, system access and configuration, staff capacity and data competence, and workflow [1, 7].

In the ACDC+ project, we identified the following issues that have the potential to compromise residential aged care data integrity at a primary and secondary level.

1. The sourcing and matching of resident data across systems. While they are working towards a solution, the provider organisation does not have a global, unique resident identifier. This means matching resident records between the three commonly used clinical systems (AutumnCare, RISC-Net, and BestMed) is a time-consuming, manual process.
2. A lack of capacity to share resident data system-to-system with external providers. External access to AutumnCare is available to some visiting providers, Allied Health and GPs, but communication with most external healthcare providers (including hospital and outpatient settings) is via email, fax or printed transfer forms/reports sent with the resident. It is not uncommon for information to go missing between care settings, adding to the data burden at a clinical (facility) setting and compromising resident care and data integrity.
3. Staffing issues. As with most of the aged care sector, staffing is an ongoing issue – particularly in rural or remote areas. Staffing issues are mainly related to high turnover, and a workforce dominated by junior and/or inexperienced Registered Nurses. There are also a high proportion of staff with English as a second language. Our industry partner has good support structures and education practices that identify and respond to issues within their facilities, but staffing continuity and capability factors can have a significant impact on documentation competence (data entry) with the potential to compromise data integrity.

References

1. Tshering, G., et al., *Factors impacting clinical data and documentation quality in Australian aged care and disability services: a user-centred perspective.* BMC Geriatr, 2024. **24**(1): p. 338.
2. Davis, J., A. Morgans, and S. Burgess, *Information management in the Australian aged care setting: An integrative review.* Health Information Management Journal, 2017. **46**(1): p. 3-14.
3. Pearce, F., et al., *Digital Maturity in Aged and Community Care: The Current State and Resources Required*. 2023, Aged Care Industry I.T Company, Australia. p. 59.
4. Livingstone, A. and G. Gould, *Residential Aged Care Facilities Use of Clinical Care Software: Final Report*. 2023, Aged Care Industry I.T Company, Australia.
5. Sutton, N., et al., *Quality effects of home acquisitions in residential aged care.* Australasian Journal on Ageing, 2024. **43**(1): p. 158-166.
6. KPMG, *Aged Care Market Analysis 2023*. 2023, KPMG: Australia.
7. Seaman, K.L., et al., *Transforming routinely collected residential aged care provider data into timely information: Current and future directions.* Australasian Journal on Ageing, 2021. **40**(3): p. e262-e268.
8. Australian Institute of Health and Welfare, *Residential Aged Care Quality Indicators - October to* December *2020*. 2020, AIHW: Canberra. p. 9.

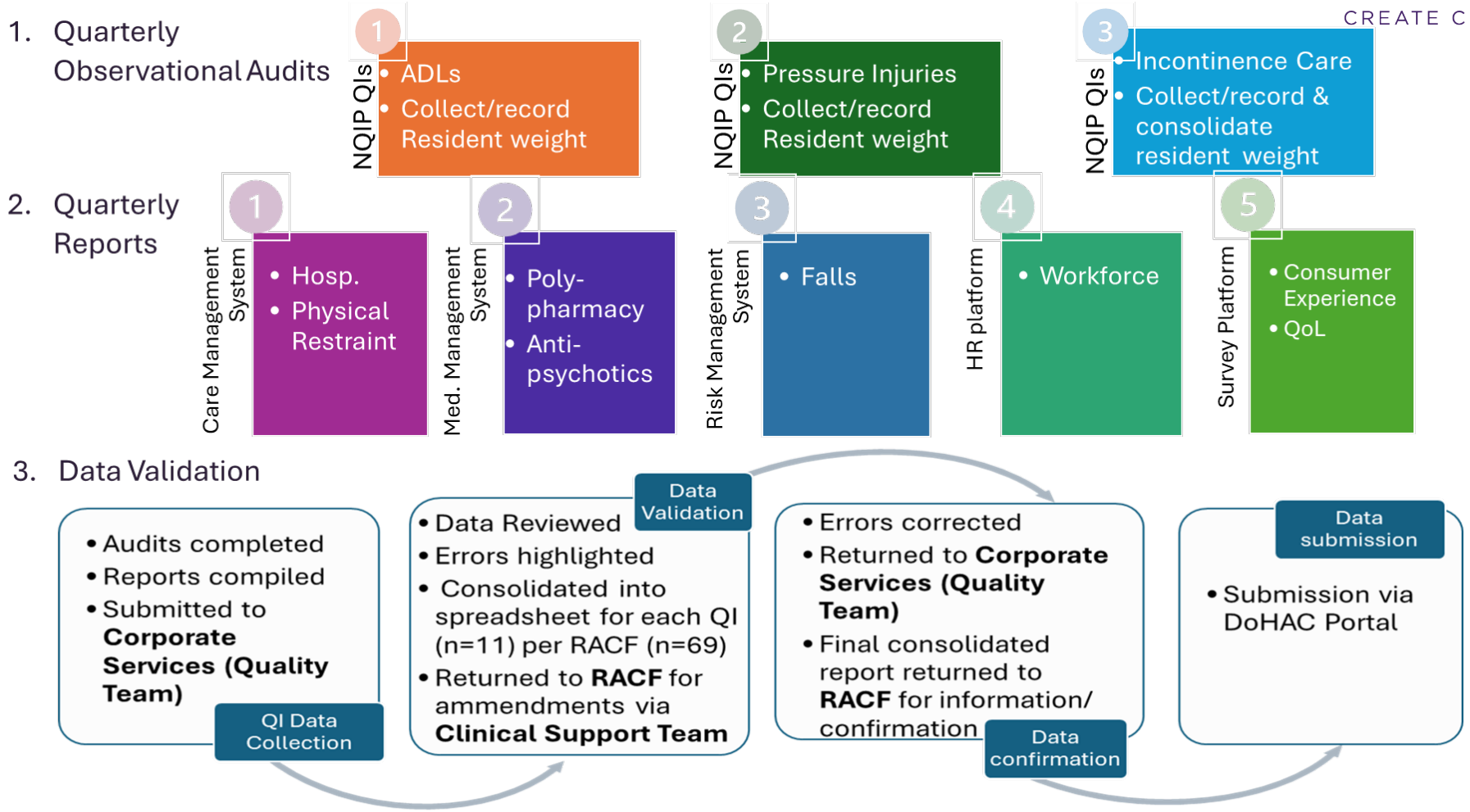

Figure 1: EXAMPLE NQIP QI data aggregation and submission workflow

Abbreviations as follows: ADLs = activities of daily living; Med. = Medications; HR = human resources; QoL = quality of life; RACF = residential aged care facility; DoHAC = Australian Government Department of Health and Aged Care.

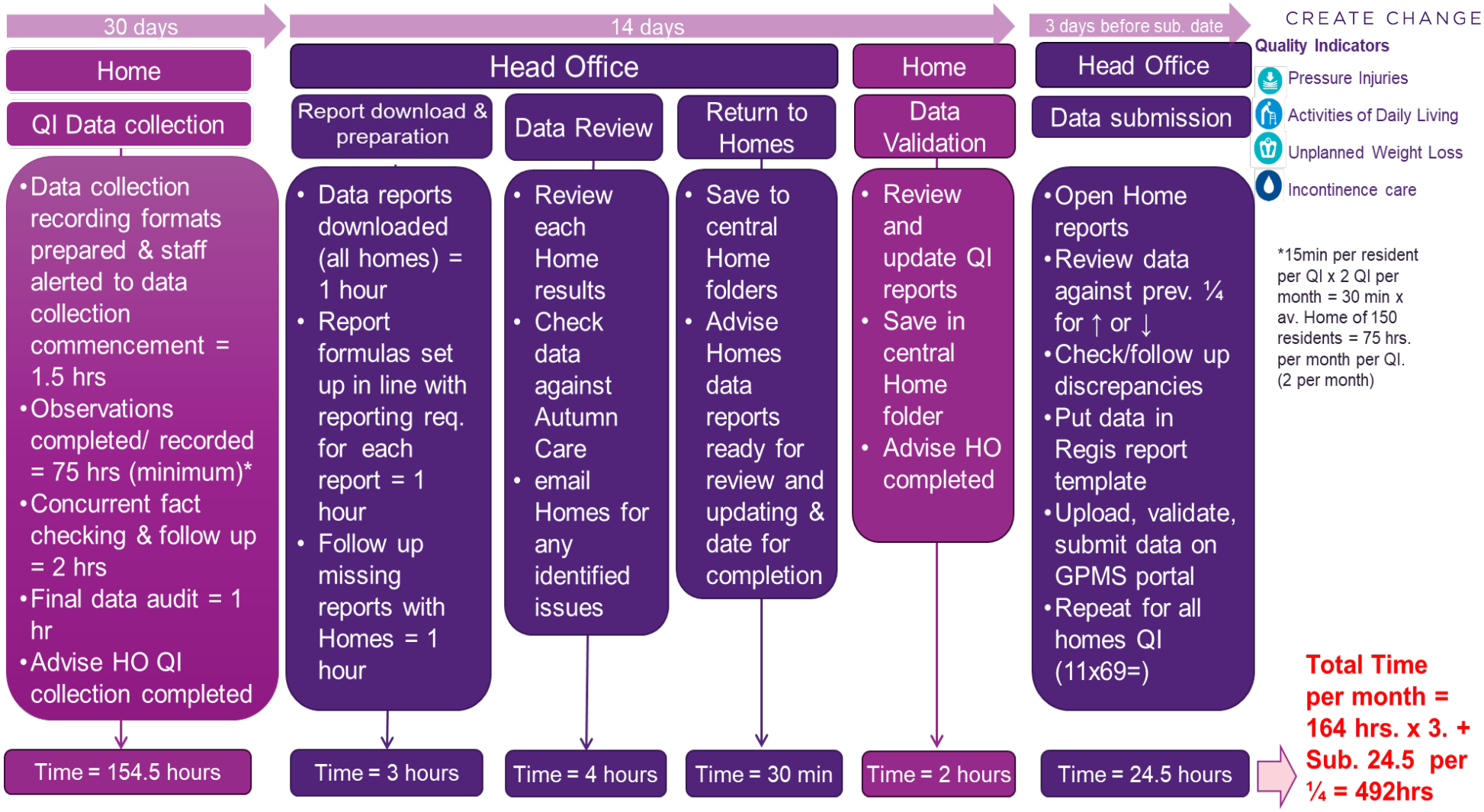

Figure 2: EXAMPLE NQIP QI quarterly Observational Audit actions and timelines for PI, ADL, Weight and IC QIs

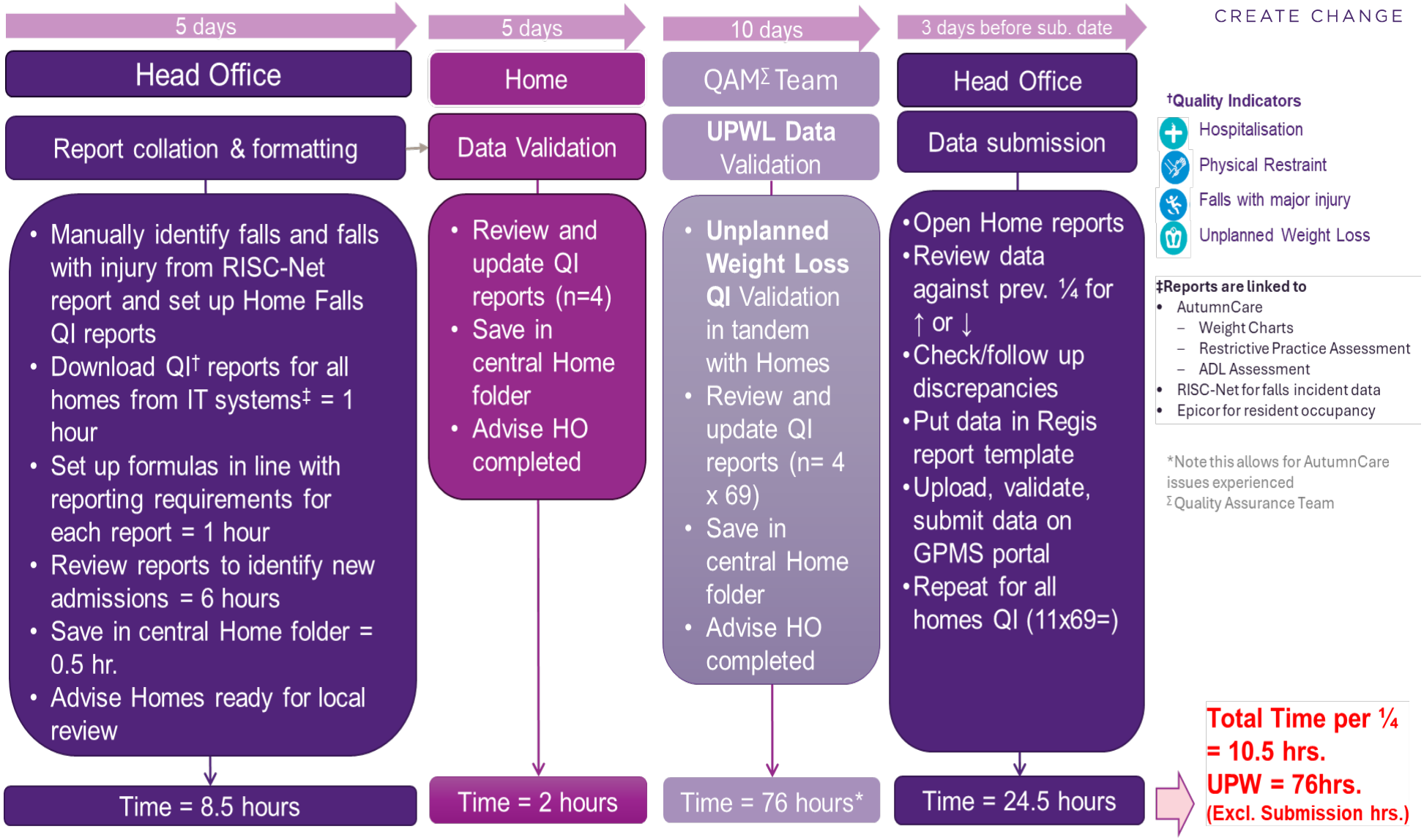

Figure 3: EXAMPLE NQIP QI Quarterly Reporting Process: actions and timeline for Hosp., PR, Falls and UWL

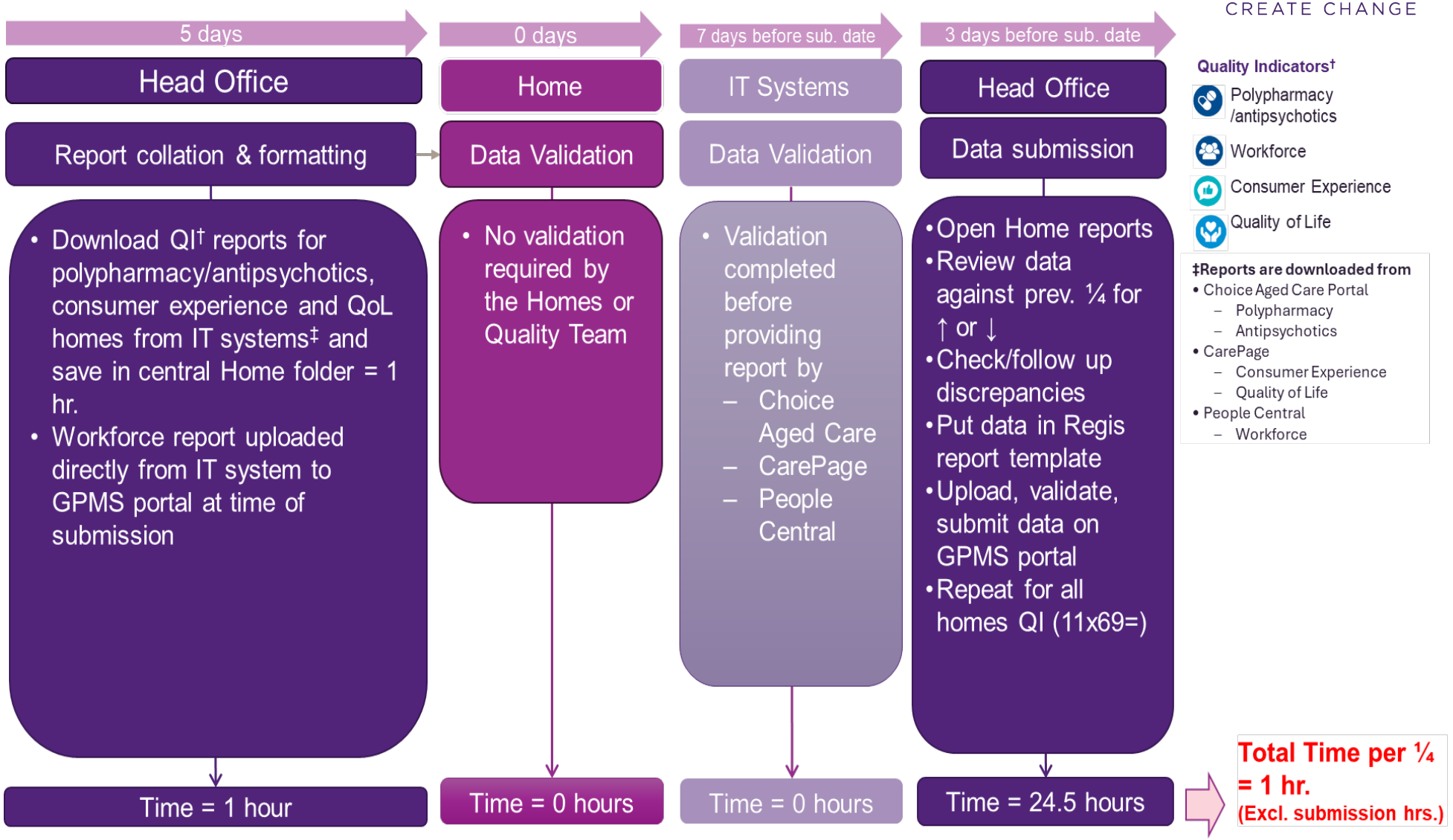

Figure 4: EXAMPLE NQIP QI Quarterly Reporting Process: actions & timeline for Med. man., Workforce, consumer exp., QoL

Table 1: EXAMPLE NQIP QI data aggregation systems and processes

No.	Quality Indicator	IT System	Collector	Recording Point
1	Pressure injuries	AutumnCare	RN†	3 monthly Obs. Audit
2	Physical restraint	AutumnCare	CCM*	Restraint Register report
3	Unplanned weight loss	AutumnCare	RN	3 monthly Obs. Audit
4	Falls and major injury	RISC-Net/Epicor	CCM	3 monthly report
5	Medication management	BestMed	CCM	3 monthly report
6	Activities of Daily Living	AutumnCare	RN	Resident Assessment
7	Incontinence care	AutumnCare/ BUNZL Atlas	RN	Resident Assessment
8	Hospitalisation	AutumnCare/Epicor	CCM	3 monthly report
9	Workforce	TimeTarget/People Central	Care staff/Admin	3 monthly report
10	Consumer Experience	Carepage	Lifestyle	3 monthly Survey
11	Quality of Life	Carepage	Lifestyle	3 monthly Survey

†Registered Nurse; *Clinical Care Manager; Obs. = Observational

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