

NATIONAL KPIS FOR ABORIGINAL AND TORRES STRAIT ISLANDER PRIMARY HEALTH CARE DATA

Control data set and data validation Summary report

Conducted by NPS MedicineWise for
Department of Health, Indigenous Health Division
June 2020 | v1.1

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Suggested citation

NPS MedicineWise, National KPIs for Aboriginal and Torres Strait Islander primary health care data – Control data set and data validation summary report, Sydney: NPS MedicineWise, 2020.

Acknowledgments

NPS MedicineWise acknowledges that this work and report were funded by the Australian Government Department of Health.

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EXECUTIVE SUMMARY

This report provides the results of a data validation service undertaken by NPS MedicineWise for the Department of Health (DOH) to validate the National Key Performance Indicators (nKPIs) Report and the Online Services Report (OSR) which are required from primary health care organisations providing services to Indigenous people.

Four clinical information systems (CISs) were validated – Best Practice (Bp), Communicare (Ccare) Medical Director (MD), and MMEx. Data validation was undertaken separately for the two reports – nKPI report and OSR report, using a control data set (CDS) to check the integrity of the reports.

All CISs passed validation testing with only minor qualifications. Discrepancies identified in the reports related to the scope of data captured in the CIS, the data structure of the CIS, the standard workflow adopted by users of the CIS and differences in interpretation of the report measures.

Six recommendations are proposed, relating to documentation of definitions and reporting requirements, communication with CIS vendors, improvements to support ongoing validation and, refinements to definitions and business rules to improve the accuracy and validity of reported measures.

Summary of recommendations

Recommendation	Responsibility
<p>Recommendation 1</p> <p>Include in the report specifications document:</p> <ul style="list-style-type: none">• a summary table of all NKPIs and OSR measures which shows the date from which the indicator/measure is required to be reported• a summary of any changes to report specifications with explanatory notes.	DoH and NPS MedicineWise
<p>Recommendation 2</p> <p>Provide an updated mapping document to the DOH and NPS MedicineWise each time a new version of the CIS is deployed. The mapping document provides detail on how the nKPI and OSR measures are calculated, including the relevant source fields and user actions/workflow specific to each CIS.</p>	CIS vendors
<p>Recommendation 3</p> <p>Produce reports in a format which lists each Measure Code alongside the corresponding reported values (eg numerator, denominator, percentage). This will improve transparency in reporting logic and assist with validating report accuracy and troubleshooting. (This format is currently not available for MD reports.)</p>	CIS vendors (MD)

Recommendation	Responsibility
<p>Recommendation 4</p> <p>Review the CDS in consultation with CIS vendor representatives to ensure that the test data does not contain illogical scenarios, or data values that cannot occur in a live setting (eg, blank date of birth). CIS vendors should review and update their CDS import processes, where required, to ensure the test data is appropriately represented in the CIS prior to report validation.</p>	<p>NPS MedicineWise and CIS vendors</p>
<p>Recommendation 5</p> <p>Add the Worker Types required for OSR report CS2 (where these are currently missing from the report). See Appendix 1.</p>	<p>CIS vendors</p>
<p>Recommendation 6</p> <p>The same Visit Types (or similar qualifiers) should be used across all CISs to define visits/client contacts for both nKPI and OSR reports. See Appendix 2.</p>	<p>DoH, NPS MedicineWise and CIS vendors</p>

INTRODUCTION

NPS MedicineWise has been contracted by the Department of Health (Primary Health Data and Evidence Branch) to undertake a Data Validation Service, addressing the National Key Performance Indicators (nKPIs) Report and the Online Services Report (OSR) which are reported to the Indigenous Health Division (IHD) by primary health care organisations providing services to Indigenous people.

Under the current contract, NPS MedicineWise will manage a Control Data Set (CDS) and offer a Data Validation Service for the two reports. NPS MedicineWise will also assume oversight, maintenance, updating and online hosting of the nKPI and OSR Specification document as part of the contract.

NPS MedicineWise will work with the four main CIS vendors (Bp, Ccare, MD and MMEEx) and the DOH to:

- validate vendors' direct load nKPI and OSR reports in a test instance of the software whenever indicators change, or software is updated
- analyse and troubleshoot any difference between expected results and test results
- resolve any identified discrepancies in conjunction with vendors and the Department and then re-test
- update and maintain the CDS tool for generating test data, in particular ensuring it is updated whenever the nKPI and/or OSR indicators/questions are amended
- maintain availability and currency of CIS uploader software (including making any necessary payments to keep uploader software current)
- maintain availability and currency of CIS test environment (including making necessary payments to vendors)
- ensure alignment with the Departmental Health Data Portal and vendor change cycle
- report on the results of each data validation round, to take the form of:
 - a detailed report to the Department of Health; and
 - a short PDF summary report (to be delivered in accessible form) for publication by the Department of Health)
- maintain (including updating when necessary) and provide online hosting of the nKPI and OSR Specification document, ensuring that it remains current and available, and is aligned with the parent METeOR specifications.

PROJECT APPROACH

Data validation was undertaken separately for the two reports – nKPI report and OSR report. The two CDSs used in the previous round of testing were used again and were refined as required to troubleshoot and test identified anomalies.

Each CIS vendor was required to provide remote access to a test environment. Securing access to the test environments was a critical factor in being able to run and test the reports.

Each test environment hosted the most recent version of the CIS, as supplied by the vendor. Where vendors were able to provide version updates during the testing period, this was accommodated by the evaluation team.

The main focus of the current project was to validate the output of the two reports, specifically to ensure that the definition of each component of the reports had been correctly interpreted by the reporting software, and produced the results expected, based on the data provided in the CDS.

Detailed definitions of all measures were taken from 'Specifications for National Key Performance Indicators and Online Services Reporting June 2020 v10.0'. This specifications document was revised by NPS MedicineWise and reviewed by vendors in February 2020. It is now available online at www.nps.org.au/assets/Specifications-for-national-Key-Performance-Indicators-and-Online-Services-Reporting.pdf

The results provided in each report were compared on a cell-by-cell basis with the results expected, based on the CDS data. Where anomalies were identified, the validation team reviewed the individual patient records from the CIS (using 'drill-down' functionality where available) and provided detailed written feedback to the CIS vendor representative. This was an iterative process with the result being:

- correction of the anomaly
- justification of minor discrepancies in the report based on system architecture, or adopted clinical or service practices
- acknowledgement and notation of deficits in existing reports.

Out of scope

Electronic submission of report data to the Australian Institute of Health and Welfare (AIHW) is a feature of the four CISs evaluated, however this functionality was not tested as part of the current project.

Rules adopted for validation

Where there was ambiguity about the interpretation of measure definitions or business rules, the following rules, conventions or limitations were adopted by the assessment team to ensure consistency in the validation process.

nKPI01 Birth weight recorded and nKPI02 Birth weight

The METeOR¹ definition limits this measure to '...babies born within the previous 12 months who had a medical record at the primary health-care service'.

The specifications now include the condition "Where a baby does not have a separate client record, the mother's record may be used as a source of birth details. (Note that this is a deviation from the METeOR definition)". In the current evaluation, this only occurs in MMEx. In Bp, data is sourced from both the baby's record and linked mother's record.

¹ Indigenous primary health care: PI01b <https://meteor.aihw.gov.au/content/index.phtml/itemId/717266>

nKPI02 Birth weight

The METeOR² definition states 'Excludes multiple births and stillbirths. Births that are at least 20 weeks gestation or at least 400 grams birthweight are included'.

The criteria regarding minimum gestational age or birthweight have proved confusing to interpret and implement. It is almost certain that a baby born at less than 20 weeks gestation or less than 400 grams birthweight will be stillborn and will therefore be excluded on this basis. Therefore test cases that were less than 400 grams birthweight or less than 20 weeks gestation have been removed from the Control Data Set

nKPI09 Smoking status recorded and nKPI10 Smoking status

The METeOR^{3,4} definitions limit these measures to patients 'whose smoking status has been recorded within the previous 24 months', however it also states that where 'smoking status does not have an assessment date assigned ... (it) should be treated as current ...'

As this requirement is currently under revision, results are considered correct whether or not 'recorded date' filter is applied.

nKPI11 Smoking status of women who gave birth

The METeOR⁵ definition limits this measure to women '...whose smoking status has been recorded within the previous 12 months...' however it also states that where 'smoking status does not have an assessment date assigned ... (it) should be treated as current ...'

As this requirement is currently under revision, results are considered correct whether or not 'recorded date' filter is applied.

nKPI12 Overweight or obese clients

This measure defines BMI as '... using a weight measurement taken within the previous 24 months and a height measurement taken since the client turned 25 (or taken within the previous 24 months for clients aged 15–24 years)'. The Meteor definition states "Only include those clients whose BMI was classified using a height measurement taken since the client turned 25"⁶.

It is not always possible to infer from the CIS record whether the "BMI was classified using a height measurement taken since the client turned 25", particularly if no height measurement is recorded, or if a recorded height measurement is not dated. For the purpose of the current validation, all patients with a recorded BMI were included – the height measurement was not considered. (It is assumed that clinicians recording BMI are using appropriate height and weight measures in their calculations.)

nKPI19-A eGFR result

This measure counted patients with eGFR reported, disaggregated by eGFR level. Although eGFR results are numeric, they may be reported as a non-numeric string such as '> 90'. To test whether non-numeric values were appropriately categorised, values of '> 90' were included in the test data. (This was modified to '>^90' for testing MD to reflect the format in which the value is stored in the MD system).

Although eGFR results may be reported as other strings or other formats, these were not explored in this round of validation.

² Indigenous primary health care: PI02b <https://meteor.aihw.gov.au/content/index.phtml/itemId/717271>

³ Indigenous primary health care: PI09b <https://meteor.aihw.gov.au/content/index.phtml/itemId/717302>

⁴ Indigenous primary health care: PI10b <https://meteor.aihw.gov.au/content/index.phtml/itemId/717306>

⁵ Indigenous primary health care: PI11a <https://meteor.aihw.gov.au/content/index.phtml/itemId/717308>

⁶ Indigenous primary health care: PI12b <https://meteor.aihw.gov.au/content/index.phtml/itemId/717314>

Units of measure relating to patient encounters

The primary units of measure for the reports are:

1) **Babies**

Includes infants born within the previous 12 months

2) **Regular clients**

A regular client is defined as a client who attended the health care service at least 3 times in the past 2 years. It is not explicit in the METeOR⁷ definition whether two or more attendances on one day should be considered a single visit when identifying a regular client.

For the purpose of the current validation, multiple visits on one day were treated as separate instances to identify a regular client.

Three of the four CISs validated count each visit individually for the purpose of determining regular patient status. However, MMEx counts multiple visits with the same provider on the same day as a single visit, for the purpose of determining regular patient status. The impact of this variation is considered to be minimal.

3) **Episodes of care**

Multiple contacts on the same day are treated as a single episode of care.

4) **Contacts**

Multiple contacts on the same day are treated as separate instances of contact.

For the purpose of the current validation, multiple contacts on one day were counted as separate instances, regardless of whether or not the contacts were with different providers.

MMEx counts multiple visits with the same provider on the same day as a single visit. The impact of this variation is considered to be minimal.

5) **Individual clients seen**

Each client is counted once, if they have had one or more contacts.

⁷ <https://meteor.aihw.gov.au/content/index.phtml/itemId/686291>

ABBREVIATIONS

AIHW	Australian Institute of Health and Welfare
Bp	Best Practice
Ccare	Communicare (Telstra Health)
CDS	Control Data Set
CSV	comma separated values
DOH	Department of Health
GA	gestational age
IHD	Indigenous Health Division (of the Department of Health)
MD	Medical Director
METeOR	Metadata Online Registry (AIHW)
nKPI	National Key Performance Indicator
OSR	Online Service Report

NKPI REPORT VALIDATION SUMMARY

The nKPI report comprises 24 KPIs, each containing several individual measures. In total, 672 measures are reported as a numerator and denominator (from which a percentage is calculated). Each measure has a unique code (ranging from nKPI-01002 to nKPI-24016) and the numerator and denominator for each measure was checked against the expected value, using an Excel-based validation tool.

Three CISs (Bp, Ccare and MMEx) produced reports which listed the report values against the measure code in a single data table, which could be directly compared with the expected results.

MD presented the report values in a tabular format with a separate table for each nKPI. To facilitate evaluation of the MD reports, a mapping file was required to be developed to convert the report output into a format which could be linked to the expected results template.

The following table shows the status of each nKPI, following discussion with the respective CIS vendor representatives.

Legend

	Results are correct
	Errors for investigation
	Minor difference – not expected to significantly impact nKPIs
	Calculation correct according to vendor specification, but differences with interpretation of specification between vendor and CDS

nKPI	nKPI description	Bp	Ccare	MD	MMEx	Comments
01	Proportion of Indigenous babies born within the previous 12 months whose birth weight has been recorded					MMEx – results are based on birth outcome in <u>mother's record</u> . Excludes stillbirths.

nKPI	nKPI description	Bp	Ccare	MD	MMEx	Comments
02	Proportion of Indigenous babies born within the previous 12 months whose birth weight results were low, normal or high					<p>Bp – For Bp Indigo and lower versions, plurality is not available so multiple births are not excluded. For Bp Jade, a ‘Births wizard’ has been added which links a new baby record to the mother’s record from which gestation and plurality can be accessed. The new workflow is unable to be tested at this time as the CDS does not contain mother’s records for the baby records.</p> <p>Ccare – multiple births are not excluded as Ccare does not capture plurality. When all users are upgraded to the new version of Ccare, this information will be recorded.</p> <p>MD – multiple births are not excluded. This is a known limitation of the current system due to the existing data structure and logic.</p>
03	Proportion of regular clients for whom an MBS Health Assessment for Aboriginal and Torres Strait Islander People (MBS Item 715) was claimed					
04	Proportion of Indigenous children who are fully immunised					<p>Ccare – immunisations are not individually recorded for infants. A completed age-specific review and the absence of any overdue recalls for immunisation reviews are considered evidence that all required immunisations have been delivered.</p>
05	Proportion of regular clients with Type II diabetes who have had an HbA _{1c} measurement result recorded					
06	Proportion of regular clients with Type II diabetes whose HbA _{1c} measurement result was within a specified level					

nKPI	nKPI description	Bp	Ccare	MD	MMEx	Comments
07	Proportion of regular clients with a chronic disease for whom a GP Management Plan (MBS Item 721) was claimed					
08	Proportion of regular clients with a chronic disease for whom a Team Care Arrangement (MBS Item 723) was claimed					
09	Proportion of regular clients whose smoking status has been recorded					<p>Definition of this KPI states smoking status needs to be recorded within the previous 24 months.</p> <p>As this requirement is currently under revision results are considered correct whether or not recorded date filter is applied.</p> <p>(For KPI 09, Bp, Ccare and MD include all patients with smoking status, regardless of recorded date.)</p>
10	Proportion of regular clients with a smoking status result					<p>Definition of this KPI states smoking status needs to be recorded within the previous 24 months.</p> <p>As this requirement is currently under revision results are considered correct whether or not recorded date filter is applied.</p> <p>(For KPI10, Bp, Ccare and MD include all patients with smoking status, regardless of recorded date.)</p>
11	Proportion of regular clients who gave birth within the previous 12 months with a smoking status of 'current smoker', 'ex-smoker' or 'never smoked'					<p>Definition of this KPI states smoking status needs to be recorded within the previous 12 months.</p> <p>As this requirement is currently under revision results are considered correct whether or not recorded date filter is applied.</p> <p>(For KPI11, Bp, Ccare and MD include all patients with smoking status, regardless of recorded date.)</p>

nKPI	nKPI description	Bp	Ccare	MD	MMEx	Comments
12	Proportion of regular clients who are classified as overweight or obese					
13	Proportion of regular clients who had their first antenatal care visit within specified periods					Bp – Unable to test missing GA as this is a required field when adding antenatal visits.
14	Proportion of regular clients aged 50 years and over who are immunised against influenza					
15	Proportion of regular clients with Type II diabetes or COPD who are immunised against influenza					
16	Proportion of regular clients whose alcohol consumption status has been recorded					<p>Bp – recording of alcohol status is separate to AUDIT-C assessment. If ‘AUDIT-C’ is completed but not ‘Alcohol Status’, record is not captured and not being counted in this indicator. This will not be a problem with real data as long as providers who complete an AUDIT-C assessment also record alcohol status.</p> <p>MD – in practice, recording of alcohol status can only be captured through completing the AUDIT-C assessment. Therefore, the MD report has been designed to only capture alcohol use recorded as AUDIT-C and not as ‘Alcohol status’ (as per definition).</p>
17	Proportion of regular clients who had an AUDIT-C with result within specified levels					

nKPI	nKPI description	Bp	Ccare	MD	MMEx	Comments
18	Proportion of regular clients with a selected chronic disease who have had a kidney function test					
19	Proportion of regular clients with a selected chronic disease who have had a kidney function test with results within specified levels					
20	Proportion of regular clients who have had the necessary risk factors assessed to enable CVD assessment					
21	Proportion of regular clients aged 35 to 74 years who have had an absolute cardiovascular disease risk assessment with results within specified levels					
22	Proportion of regular clients who have had cervical screening					
23	Proportion of regular clients with Type II diabetes who have had a blood pressure measurement result recorded					
24	Proportion of regular clients with Type II diabetes whose blood pressure measurement result was less than or equal to 130/80 mmHg					

OSR REPORT VALIDATION SUMMARY

The OSR report comprises 6 indicators of service activity each containing several individual measures. In total, 378 measures are reported as a numerator and denominator (from which a percentage is calculated). Each measure has a unique code (ranging from OSR-CS1a-001 to OSR-CS3a-0009) and the numerator and denominator for each measure was checked against the expected value, using an Excel-based validation tool.

Legend

	Results are correct
	Errors for investigation
	Minor difference – not expected to significantly impact nKPIs
	Calculation correct according to vendor specification, but differences in interpretation of specification between vendor and CDS
	Unable to test

Note: The table below disregards errors which are solely the result of the definition of a Client contact (and the inclusion/exclusion of specified Visit Types). These errors are present to some degree in all CISs and are addressed separately in the Discussion.

OSR measure	Description	Bp	Ccare	MD	MMEEx	Details
CS1a	Episodes of care Number of episodes of care provided within the previous 12 months					

OSR measure	Description	Bp	Ccare	MD	MMEx	Details
CS2	Client contacts (general) <ul style="list-style-type: none"> Aboriginal and Torres Strait Islander health worker Aboriginal and Torres Strait Islander health practitioner Doctor – general practitioner Nurses Midwives Substance misuse / drug and alcohol worker Tobacco worker / coordinator Dentists / dental therapists Dental support (eg, dental assistant / dental technician) Sexual health worker Traditional healer Other health / clinical staff Transport (health professionals who do not work for the service) Transport (health professionals who work for the service) 					Bp – some worker types are not recognised (see Appendix 1) Ccare – some worker types are not recognised (see Appendix 1) MD – some worker types are not recognised (see Appendix 1) MMEx – where two contacts occur on the same day, these are counted as one.
CS2 cont'd	Client contacts (medical specialists) <ul style="list-style-type: none"> Paediatrician Endocrinologist Ophthalmologist Obstetrician / Gynaecologist Ear, nose and throat specialist Cardiologist Renal medicine specialist Psychiatrist / Psychiatric registrar Dermatologist Surgeon Specialist other or not specified 					Bp – medical specialist worker types are not recognised (see Appendix 1). MD – some worker types are not recognised (see Appendix 1). MMEx – where two contacts occur on the same day, these are counted as one.

OSR measure	Description	Bp	Ccare	MD	MMEx	Details
CS2 cont'd	Client contacts (social and emotional well-being / counsellors) <ul style="list-style-type: none"> Psychologist Counsellor Social worker Welfare worker SEWB staff: Link Up caseworker SEWB staff other or not specified 					Bp – some worker types are not recognised (see Appendix 1). Ccare – some worker types are not recognised (see Appendix 1) MD – some worker types are not recognised (see Appendix 1) MMEx - where two contacts occur on the same day, these are counted as one
CS2 cont'd	Client contacts (allied health professionals) <ul style="list-style-type: none"> Audiologist / Audiometrists Diabetes educators Dieticians Optometrists Pharmacists Physiotherapists Podiatrists Speech pathologists Allied health other or not specified 					MD – some worker types are not recognised (see Appendix 1) MMEx - where two contacts occur on the same day, these are counted as one
CS3a	Individual clients seen Number of clients seen within the previous 12 months					

ANALYSIS BY SYSTEM

The following summary describes the outcome of the analysis of each of the CISs, outlining the functionality provided within the test environment, issues encountered with importing the CDS, any limitations of the CIS with respect to capturing and storing the data, and the completeness of the reports produced.

Best Practice

Accessing the test environment

- The Bp test environment was accessed through a remote desktop connection.
- One remote desktop login was provided to the team therefore only one person could access the test environment at any one time.
- Prior to logging in, the virtual machine needed to be started (Bp provided a web link for us to be able to do this).
- An evaluation copy of Bp was available on the virtual machine for the team to validate data that was loaded using the import tool.
- The version tested was Bp Premier: Jade Edition build number 1.10.0.880.

Loading the nKPI CDS

- An Excel file was created from the nKPI CDS file using a copy of 'Tab C Values for Export'.
- Prior to importing the data, the database needed to be restored using the 'Restore Configured Database' script.
- The file was loaded into Bp using the 'nKPI Uploader'.
- A message to inform the user of successful import was displayed and there was an option to view a log of the records that were imported.
- Once data were imported, the 'Set all Patient Creation Dates to 1 December 2018' script was run. *This step was introduced to address errors in nKPI-01 and nKPI-02 that were caused by creation date being set to import date.*

Validating the nKPI report

- The nKPI report was run using the 'Bp Premier Reporting Tool'.
- The report produced was in the form of a HTML file with a single page listing each nKPI measure and displaying the numerator, denominator and percent in a table format. Each line that had a result could be expanded to display the patient's name, date of birth and Patient ID.
- The numerator and denominator values were checked against the 'Expected Results' from the CDS file. The following discrepancies were identified:
 - An antenatal visit was not created in Obstetrics History if the gestational age on the date of the antenatal visit was blank in the spreadsheet. *As Bp calculates gestational age from LMP, this would not occur in a live situation. No actions to amend this are necessary and is noted as a limitation of the import process.*
 - The Bp report currently only includes alcohol status results for nKPI-16. That is, patients who have completed an AUDIT-C assessment but do not have an alcohol status recorded, will not be included into the measure for nKPI-16. *Alcohol status and AUDIT-C assessments are recorded in different areas of the software. Bp have the capacity to update the reporting tool to take data from both areas however consideration needs to be given to whether it will cause confusion for users and data analysts at practices by taking*

data from two sources. This will not be a problem with real data as long as providers who complete an AUDIT-C assessment also record alcohol status.

- It was noted that nKPI-02 is calculated from both the child's and the mother's patient record. The birth weight is taken from the child's patient record, however the exclusion criteria such as gestational age and multiple birth are taken from the mother's record.

Loading the OSR CDS

- An Excel file was created from the OSR CDS file using a copy of 'Tab C Values for Export'.
- Prior to importing the data, the database needed to be restored using the 'Restore Configured Database' script.
- The file was loaded into Bp using the 'nKPI Uploader'.
- A message to inform the user of successful import was displayed and there was an option to view a log of the records that were imported.

Validating the OSR report

- The OSR report was run using the 'Bp Premier Reporting Tool'.
- The report produced was in the form of a HTML file with a single page listing each nKPI measure and displaying the numerator, denominator and percent in a table format. Each line that had a result could be expanded to display the patient identifier, patient name and date of birth.
- The values were checked against the 'Expected Results' from the CDS file. The following discrepancies were identified:
 - Bp does not exclude visits with visit type 'Out of office', 'Hospital' or 'Telephone'.
 - It was noted that there are several worker types that are not supported.

Assessment

- Both the nKPI report and the OSR report passed validation testing with only minor qualifications:
 - nKPI-02 uses information from both the mothers' and babies' records instead of just the babies' record as stipulated.
 - nKPI-16 does not include records that only have an AUDIT-C score and no recorded alcohol status.
 - The OSR report excludes 14 worker types which were not supported in the CIS version that was tested.
 - The OSR report does not exclude visits with visit type 'Out of office', 'Hospital' or 'Telephone'.

Communicare

Accessing the test environment

- The Ccare test environment was accessed through a virtual private network (VPN) and remote desktop connection. Each member of the evaluation team was given a login and password to connect to the VPN. Four virtual machines, all sharing the same database, were provided so more than one team member could access the test environment at the same time if required.
- A username and password, and an administrator password, were provided to allow appropriate access to the CIS.
- The version used for testing was 19.2.6.59.

Loading the nKPI CDS

- An Excel file was created from the nKPI CDS file using a copy of 'Tab C Values for Export'.
- The file was loaded into Ccare using the CDS import tool.
- Prior to loading a new CDS file, the database was cleared by selecting 'Purge Data' from the CDS import tool.
- A log file which is created if errors are encountered during the data load identified the following errors:
 - Duplicate Medicare numbers were detected – *This error was ignored as it did not impact other values being imported.*
 - Alcohol consumption was not captured at import – *Affected records were manually updated via the CIS interface.*
 - Other missing values – date of birth, weight value with no measurement date, HDL date but no value, stillbirth with no GA – were rejected. *Affected records were manually updated via the CIS interface to reflect the intention of the CDS.*

Validating the nKPI report

- The nKPIs could be viewed on screen via the Ccare Report menu option 'National KPI' (Options - Locality Group: All; Patient Indicator: AIHW Regular Client; Last Report Date: 31/12/2019).
- The complete nKPI report could be saved as a CSV file via the Government Reporting Tool (Options - Report End Date: 31/12/2019; Organisation: All organisations; Group: All groups AIHW Regular Client).
- The report (NkpiPercentageMeasures.csv) contained a list of each nKPI measure code, numerator, denominator and percent. An additional report (NkpiPercentageMeasurePatients.csv) was also produced which showed the Ccare Patient Key for all records included in the numerator and denominator for each measure.
- The numerator and denominator values were checked against the 'Expected Results' from the CDS file. The following discrepancies were identified:
 - The number of visits recorded for many patients was inflated. It was noted that the import process resulted in a visit being created whenever a date was imported against any clinical item, for example a 'Health Assessment' visit on 01/02/2018 with an MBS claim of '715' on the same date generated two visit records. (This also resulted in patients erroneously being classified as 'regular' patients). *To prevent additional 'visits' being counted in the report, each 'invalid' visit was identified, and the visit status changed to 'Administration – no client contact' through the Service Recording function in the CIS. This allowed retention of the clinical information but prevented the additional visits being 'counted' in the report.*
 - Missing birthweight – birthweight was not captured in the import process. *Affected records were manually updated via the CIS interface.*
 - Alcohol status and AUDIT-C scores were not captured in the import process. *Affected records were manually updated via the CIS interface.*
 - nKPI-02 (Birthweight) did not exclude babies who were multiple births (contrary to KPI definition) as Ccare does not capture plurality in the patient record (of the baby). *This is limitation of the system architecture but is expected to be rectified when all users are updated to the new version of software.*
 - nKPI-04 (Immunisation) was reported using an alternative methodology to that prescribed in the definition. In summary, the absence of any overdue recalls for immunisation reviews, and the absence of any immunisation recalls (other than Panvax, Fluvax or Vaxigrip) was interpreted as indicating full immunisation. *This was considered an acceptable alternative interpretation and workflow.*
 - New mothers with no antenatal visits in the CDS were not reported as having no antenatal visits in nKPI-13. Ccare requires a clinical item of 'No antenatal care' to be recorded in the pregnancy record for these patients to be appropriately counted. *Affected*

records were manually updated via the CIS interface. It was noted that this change reflected the normal workflow for users of Ccare .

- nKPI-13 (Antenatal Visits) was correctly reported in the on-screen Ccare Report, but the Government Reporting Tool reported patients from group 5 (no antenatal visits) under group 4 (no gestational age recorded at first antenatal visits). *This error was subsequently corrected by the vendor*

Loading the OSR CDS

- An Excel file was created from the OSR CDS file using a copy of 'Tab C Values for Export'.
- The file was loaded into Ccare using the CDS import tool.
- Prior to loading a new CDS file, the database was cleared by selecting 'Purge Data' from the CDS import tool.
- A log file which is created if errors are encountered during the data load identified the following errors:
 - Duplicate Medicare numbers were detected – *This error was ignored as it did not impact other values being imported.*

Validating the OSR report

- The OSR measures could be viewed on screen via the Ccare Report menu option 'OSR'.
- The complete OSR report could be saved as a CSV file via the Government Reporting Tool.
- The report (OSRCountMeasures.csv) contained a list of each OSR measure code, numerator, denominator and percent.
- There was no patient-level report available to identify the patients represented in each measure of the OSR report. In order to identify which patients were being counted for each indicator, we ran SQL queries in the SQL Report Editor of Ccare .
- The numerator and denominator values were checked against the 'Expected Results' from the CDS file. The following discrepancies were identified:
 - Additional visits were created against clinical items such as an MBS claim, routine antenatal visits from first antenatal visit date or pregnancy outcomes. *To prevent additional visits being counted in the report, each 'invalid' visit was identified and the visit status changed to 'Administration – no client contact' or was deleted if no relevant clinical information was attached to it.*
 - Visits with Sexual Health Workers, Traditional Healers, Other health/clinical staff and SEWB staff other or not specified were imported as GP contacts. *Affected records were manually updated via the CIS interface.*
 - There are four provider types that are not supported by Ccare but were imported as other provider types in the report thereby inflating those numbers. *This behaviour is a limitation of the import tool and will not be a problem with real users.*
 - The report counts all services except: 'no client contact' services; 'waiting', 'booked' or 'cancelled' services; and services recorded for fictitious clients therefore 'Hospital', 'Telephone' and 'Other' visit types are erroneously counted as client contacts.

Assessment

- Both the nKPI report and the OSR report passed validation testing with only minor qualifications:
 - nKPI-02 (Birthweight) did not exclude babies who were multiple births.
 - nKPI-04 (Immunisation) was reported using an alternative methodology to that prescribed in the definition.
 - The OSR report excluded four worker types which are not currently available in the CIS.

- Included and excluded visit types are different to those in the specifications document – all services are counted except for 'no client contact' services; Administration with client contact; 'waiting', 'booked' or 'cancelled' services and services recorded for fictitious clients.

Medical Director

Accessing the test environment

- The MD test environment was accessed through a remote desktop connection.
- The version tested was MedicalDirector Insights 1.8.0 (with MedicalDirector Clinical 3.18).
- One remote desktop login was provided to the team and only one person could access the test environment at a time.
- To access MD Clinical, a valid licence key was required.
- MD Clinical was available on the virtual machine with sample data for the team to enable familiarisation with the software.

Loading the nKPI CDS

- An Excel file was created from the nKPI CDS file using a copy of 'Tab C Values for Export' and saved as a CSV file.
- Importantly, this file needed to be saved with the census date set to today's date. This is because MD requires the system date and time to match the census date for correct results. As the CDS file has all dates recorded as 'offset months' this does not affect reporting of indicators.
- The file was loaded into MD using the 'CDS Data Reader'. By selecting the checkbox 'wipe data when importing' the database was cleared prior to new data being imported.
- Once the data were imported, the user then logged into MD Insights. Before running the nKPI report, a 'snapshot' of the data was generated.
- A record of the snapshot was displayed to indicate that the records were successfully captured.

Validating the nKPI report

- The nKPI report was run using the 'MD Insights' Reporting tool.
- The report produced was displayed in the web page and could be exported as an Excel file (.xlsx) with a separate tab for each nKPI. The results were displayed in a tabular format showing the breakdown of each indicator result (eg, by gender and age). Denominators for each measure were not displayed but could be calculated by adding the component numerator values for each measure, in accordance with the definition in the specifications document (See Recommendation3).
- MD did provide a patient drill-down functionality, however this was only available in the web-based version of the report, by clicking on a cell value to display an expanded pop-up page with a list of patients by name, gender and DOB. The patient list needed to be generated and exported individually for each component measure of each nKPI. This proved to be time-consuming.
- The numerator and (calculated) denominator values were transposed to an Excel document and checked against the 'Expected Results' from the CDS file.
- The following discrepancies were identified:
 - *nKPI 2* – one additional patient was reported. This was due to multiple births (twin) not being excluded This is a known limitation of the system due to the existing data structure and logic – birthweight is recorded in the child's record but plurality is recorded in the mother's record and the two records are not connected.
 - *nKPI 16* – Fewer records than expected were reported for this nKPI. This was due to the report including patients with an AUDIT-C record but not patients with only an 'alcohol

consumption' recorded. In practice, MD users can only record alcohol status through completion of an AUDIT-C assessment. *Therefore, this discrepancy is unlikely to be of significance.*

Loading the OSR CDS

- A CSV file was created from the OSR CDS file using a copy of 'Tab C Values for Export'.
- Importantly, this file needed to be saved with the census date set to today's date. This is because MD requires the system date and time to match the census date for correct results. As the CDS file has all dates recorded as 'offset months' this does not affect reporting of indicators.
- The file was loaded into MD using the 'CDS Data Reader'. By selecting the checkbox 'wipe data when importing' the database was cleared prior to new data being imported.
- Once the data were imported, the user then logged into MD Insights. Before running the nKPI report, a 'snapshot' of the data was generated.
- A record of the snapshot was displayed to indicate that the records were successfully captured.

Validating the OSR report

- The OSR report was run using the 'MD Insights' Reporting tool.
- The report produced was displayed in the web page and could be exported as an Excel file (.xlsx) with a separate tab for each nKPI. The results were displayed in a tabular format showing the breakdown of each indicator result (eg, by gender and age). Denominators for each measure were not displayed but could be calculated by adding the component numerator values for each measure (in accordance with the definition in the specifications document).
- MD did provide a patient drill-down functionality, however this was only available in the web-based version of the report, by clicking on a cell value to display an expanded pop-up page with a list of patients by name, gender and DOB. The patient list needed to be generated and exported individually for each component measure of the report.
- The numerator and (calculated) denominator values were transposed to an Excel document and checked against the 'Expected Results' from the CDS file.
- The following discrepancies were identified:
 - There are 4 worker types that are not supported by MD.
 - MD does not exclude visits with visit types 'Hospital', 'Email', 'SMS', 'Other' or 'Telephone'.

Assessment

- Both the nKPI report and the OSR report passed validation testing with only minor qualifications:
 - nKPI-02 (Birthweight) did not exclude babies who were multiple births. This is a known limitation of the current system due to the existing data structure and logic.
 - nKPI-16 – only patients with an AUDIT-C recorded were counted (and not patients with only an 'alcohol consumption' recorded). In practice, for the CIS version tested, MD users can only record alcohol status through completion of an AUDIT-C assessment. *Therefore, this discrepancy is unlikely to be of significance.*
 - CS2 (in the OSR report) returned 'N/A' for four worker types which are not used in the CIS.
 - MD is not excluding visits with visit types 'Hospital', 'Email', 'SMS', 'Other' or 'Telephone'.

MMEEx

Accessing the test environment

- The MMEEx test environment was accessed through a web link.
- The version used for testing was 20.4.1.2.
- User accounts were provided for each team member to log in Loading the nKPI CDS.
- A CSV file was created from the nKPI CDS file using a copy of 'Tab C Values for Export'.
- The file was loaded into MMEEx using the DVP import tool.
- There was no requirement to clear the previous data load before importing new data as each import creates a new 'Organisation' with a dedicated test user login name and password.
- An on-screen import log displayed during the data loading did not identify any errors.

Validating the nKPI report

- The nKPI report was run using the OCHREStreams option under Reports.
- The report produced was in the form of an Excel file with a single sheet listing each nKPI measure and displaying the numerator, denominator and percent and listing Patient IDs for all records included in the numerator and denominator.
- The numerator and denominator values were checked against the 'Expected Results' from the CDS file. The following discrepancies were identified:
 - Where the CDS contained two or more visits by the same provider on the same date, these were counted as one visit by MMEEx. This resulted in some patients not being classified as 'regular' patients. *To correct this, an additional visit was created for each patient through the CIS interface, and backdated to fall (on a new date) within the reporting period. This is a deficiency in the CDS import process.*
- It was noted that nKPI-01 and nKPI-02 are calculated from the baby birth record which is part of the mother's antenatal record. This workflow means a separate baby record doesn't have to be created in MMEEx. Based on this workflow, the results in the report are correct for these nKPIs.

Loading the OSR CDS

- A CSV file was created from the OSR CDS file using a copy of 'Tab C Values for Export'.
- The file was loaded into MMEEx using the DVP import tool.
- There was no requirement to clear the previous data load before importing new data as each import creates a new 'Organisation' with a dedicated test user login name and password.
- An on-screen import log displayed during the data loading identified the following errors:

Users for Provider Types 35, 36, 37, 38, 39, 40, were not found. The missing worker types were present in MMEEx but needed to be allocated to the relevant user. Once this was done the relevant contacts were manually added through the CIS interface Validating the OSR report.
- The OSR report was run using the OATSIH OSR option under Reports.
- The report produced was in the form of an Excel file with a single sheet listing each OSR measure and associated value, and listing Patient IDs for all records included in the value.
- The values were checked against the 'Expected Results' from the CDS file. The following discrepancies were identified:
 - MMEEx counts two or more contacts by the same provider on the same day as one contact. This resulted in minor under-reporting of some measures in CS2.
 - Progress notes that have a Visit Type of 'Other' are included into the report because MMEEx uses this field to allow users to enter types other than the pre-configured 'Admin'

or 'Surgery'. By default, 'Other' is classified as a consultational visit type and is therefore included into the report.

Assessment

- Both the nKPI report and the OSR report passed validation testing with only minor qualifications:
 - The nKPI reports calculated nKPI-01 and nKPI-02 using mothers' records rather than babies' records as stipulated in the definition.
 - The OSR report counts two or more contacts on the same day as one contact, resulting in minor under-reporting of some measures in CS2.

DISCUSSION

Each of the vendors validated provided access to a test environment on which the 'current' version of the CIS and related software (import tools, reporting tools) was installed.

Following importation of the CDS, two systems (MMEx and Ccare) required some manual updating of the imported records to ensure that the data were appropriately represented in the CIS.

Improvements to the import process to minimise the need for manual adjustment of imported data would facilitate the efficiency of the validation process (See Recommendation4).

All CISs passed the nKPI report validation with only minor qualifications:

- nKPI-01 and nKPI-02 were calculated using data from the mothers' records rather than babies' records in MMEx, and using both the mothers' record and babies' records in Bp.
- nKPI-02 (Birth weight) did not exclude babies who were multiple births in Bp, MD and Ccare.
- nKPI-04 (Immunisation) was reported in Ccare using an alternative methodology to that prescribed in the definition.
- nKPI-16 (Alcohol use) showed some discrepancies in reporting in Bp and MD which reflected the workflows of users of these systems.

All CISs passed the OSR report validation with only minor qualifications:

- CS2 (Client contacts by worker type) were incorrectly defined in MMEx which counted two or more contacts on the same day as one contact.
- CS2 (Client contacts by worker type) returned incomplete results for all systems due to worker types which were not supported (See Appendix 1, Recommendation 5).
- The visit types that were included or excluded differed across all the systems (See Appendix 2, Recommendation 6).

Validation of Visits and Client contacts

For defining a 'Visit' in the nKPI report, a list of included /excluded 'visit types' was provided in the original report specification.

For defining a 'Client contact' in the OSR report, a list of included /excluded visit types was not provided in the original report specification.

At a teleconference with CIS vendors on 19/12/2019 it was proposed that the measures 'Visit' and 'Client contact' have consistent definitions, and that the same visit types be included/excluded from both measures. Email communication sent 07/02/2020 reaffirmed the proposal to "Use a single definition for Visit/Client contact whilst acknowledging that different terms are used in the two reports".

Additional testing to confirm the inclusion/exclusion of visits/client contacts based on visit type, has been undertaken as part of this validation round. However, as the visit type options within each CIS vary, the interpretation of 'visit type' was not able to be adequately tested as part of the CDS validation process (eg, a surgery consultation may be recorded as 'Surgery', 'Surgery consultation', 'Consultation', 'Aboriginal health service', 'Clinic – consult', depending on the CIS). Therefore, for each CIS, several new patient records were manually added, with a variety of visit types, to test the behaviour of each system in determining Visits and Client contacts. The results are summarised in Appendix 2. Further information about each CIS is detailed below.

Best Practice

Visits and Client contacts are identified based on visit type name.

- In nKPI reporting, 'Visits' incorrectly exclude 'Hostel' visit types.
- In OSR reporting, 'Client contacts' incorrectly include 'Hospital' and 'Out of office' visit types.

- In the specification document, 'Telephone (non-clinical)' is excluded from the 'Visits' definition for nKPI reporting. Bp users potentially record 'Telephone' visit type for both clinical and non-clinical telephone encounters, however Bp has excluded Telephone encounters from 'Visits' but included them in 'Client contacts'.

The included/excluded visit types are consistent with the Bp mapping documentation.

Communicare

Visits and Client contacts are identified based on visit type name.

- In nKPI reporting, 'Visits' incorrectly include 'Hospital – All types', 'Hospital – Emergency Department', 'Hospital – General Practice', 'Telephone' and 'Other'.
- In OSR reporting, 'Client contacts' incorrectly include, 'Hospital – All types', 'Hospital – Emergency Department', 'Hospital – General Practice', 'Telephone' and 'Other'.

The included/excluded visit types are consistent with the Ccare mapping document.

Medical Director

Visits and Client contacts are identified based on visit type name.

- In nKPI reporting, 'Visits' correctly includes/excludes all visit types.
- In OSR reporting, 'Client contacts' incorrectly includes 'Email', 'Hospital consultation', 'Practice admin', 'SMS', 'Telephone' and 'Other'.

The included/excluded visit types for nKPI reporting are consistent with the specifications document however, for OSR reporting, there are discrepancies between actual included/excluded visit types and those which are in the MD mapping document.

MME_x

Visits and Client contacts are identified based on the Progress Note class. At installation, three visit types (classes) are configured – 'Surgery', 'Admin' and 'Other'. Organisations can choose to add additional visit types and flag them as 'consultational' (included in reports) or 'non-consultational' (excluded from reports).

- In nKPI reporting, 'Visits' correctly includes 'Surgery' and excludes 'Admin'.
- In OSR reporting, 'Client contacts' correctly includes 'Surgery' and excludes 'Admin'.
- In both reports, the visit type 'Other' is included as it is pre-configured by MME_x as a 'consultational' visit type. Users who select 'Other' can add additional detail (such as 'Telehealth', 'Hospital' or 'Email') in a related free text field.

The included/excluded visit types are consistent with the MME_x mapping document.

Telehealth

In view of the increase in telehealth consultations as a result of the COVID-19 pandemic, their correct inclusion in reporting was of particular interest. All CISs which included the visit type 'Telehealth' were found to be correctly including telehealth visits in reports. MME_x, which does not include the visit type 'Telehealth' (unless configured locally by the organisation), provides users with the option of selecting 'Other' and typing 'Telehealth', in which case the visit would be correctly included.

RECOMMENDATIONS

Recommendation	Responsibility
<p>Recommendation 1</p> <p>Include in the report specifications document:</p> <ul style="list-style-type: none"> • a summary table of all nKPIs and OSR measures which shows the date from which the indicator/measure is required to be reported • a summary of any changes to report specifications with explanatory notes. 	<p>DoH and NPS MedicineWise</p>
<p>Recommendation 2</p> <p>Provide an updated mapping document to the DOH and NPS MedicineWise each time a new version of the CIS is deployed. The mapping document provides detail on how the nKPI and OSR measures are calculated, including the relevant source fields and user actions/workflow specific to each CIS.</p>	<p>CIS vendors</p>
<p>Recommendation 3</p> <p>Produce reports in a format which lists each Measure Code alongside the corresponding reported values (eg numerator, denominator, percentage). This will improve transparency in reporting logic and assist with validating report accuracy and troubleshooting. (This format is currently not available for MD reports.)</p>	<p>CIS vendors (MD)</p>
<p>Recommendation 4</p> <p>Review the CDS in consultation with CIS vendor representatives to ensure that the test data does not contain illogical scenarios, or data values that cannot occur in a live setting (eg, blank date of birth). CIS vendors should review and update their CDS import processes, where required, to ensure the test data is appropriately represented in the CIS prior to report validation.</p>	<p>NPS MedicineWise and CIS vendors</p>
<p>Recommendation 5</p> <p>Add the Worker Types required for OSR report CS2 (where these are currently missing from the report). See Appendix 1.</p>	<p>CIS vendors</p>
<p>Recommendation 6</p> <p>The same Visit Types (or similar qualifiers) should be used across all CISs to define visits/client contacts for both nKPI and OSR reports. See Appendix 2.</p>	<p>DoH, NPS MedicineWise and CIS vendors</p>

APPENDIX 1

OSR Report – CS2 worker types

Contacts with the following 40 worker types are required to be reported in the OSR. For each CIS, the worker types not currently supported are indicated with ✖.

Category	Worker type	Bp	Ccare	MD	MMEx
General staff	Aboriginal and Torres Strait Islander health workers	✓	✓	✓	✓
General staff	Aboriginal and Torres Strait Islander health practitioners	✓	✓	✓	✓
General staff	Doctor – general practitioners	✓	✓	✓	✓
General staff	Nurses	✓	✓	✓	✓
General staff	Midwives	✓	✓	✓	✓
General staff	Substance misuse / drug and alcohol workers	✓	✓	✓	✓
General staff	Tobacco worker / coordinators	✓	✓	✓	✓
General staff	Dentists / dental therapists	✓	✓	✓	✓
General staff	Dental support (eg, dental assistant / dental technician)	✓	✓	✓	✓
General staff	Sexual health worker	✓	✓	✓	✓
General staff	Traditional healer	✓	✓	✓	✓
General staff	Other health / clinical staff	✓	✓	✖	✓
General staff	Transport – health professionals who do not work for the service	✖	✖	✓	✓
General staff	Transport – health professionals who work for the service	✖	✖	✓	✓
Medical specialists	Paediatrician	✖	✓	✓	✓
Medical specialists	Endocrinologist	✖	✓	✓	✓
Medical specialists	Ophthalmologist	✖	✓	✓	✓
Medical specialists	Obstetrician / Gynaecologist	✖	✓	✓	✓

Category	Worker type	Bp	Ccare	MD	MME
Medical specialists	Ear, nose and throat specialist	x	✓	✓	✓
Medical specialists	Cardiologist	x	✓	✓	✓
Medical specialists	Renal medicine specialist	x	✓	✓	✓
Medical specialists	Psychiatrist / Psychiatric registrar	x	✓	✓	✓
Medical specialists	Dermatologist	x	✓	✓	✓
Medical specialists	Surgeon	x	✓	✓	✓
Medical specialists	Specialist other or not specified	x	✓	x	✓
Social and emotional well-being / counsellors	Psychologists	✓	✓	✓	✓
Social and emotional well-being / counsellors	Counsellors	✓	✓	✓	✓
Social and emotional well-being / counsellors	Social workers	✓	✓	✓	✓
Social and emotional well-being / counsellors	Welfare workers	✓	x	✓	✓
Social and emotional well-being / counsellors	SEWB staff: Link Up caseworkers	x	x	✓	✓
Social and emotional well-being / counsellors	SEWB staff other or not specified	✓	✓	x	✓
Allied health professionals	Audiologist / Audiometrists	✓	✓	✓	✓
Allied health professionals	Diabetes educators	✓	✓	✓	✓
Allied health professionals	Dieticians	✓	✓	✓	✓
Allied health professionals	Optometrists	✓	✓	✓	✓
Allied health professionals	Pharmacists	✓	✓	✓	✓
Allied health professionals	Physiotherapists	✓	✓	✓	✓
Allied health professionals	Podiatrists	✓	✓	✓	✓
Allied health professionals	Speech pathologists	✓	✓	✓	✓
Allied health professionals	Allied health other or not specified	✓	✓	x	✓

APPENDIX 2

nKPI and OSR – Visit Types

Both the nKPI and OSR reports have 'Visit Types' that should be included or excluded. It was agreed with the CIS vendors that both reports should include and exclude the same visit types. For each CIS, the table below outlines the visit types that are currently included or excluded for each report. Visit types that are erroneously included or excluded are indicated with ✘ and visit types that are not supported by the vendor are indicated with 'N/A'.

Specification document	Bp		Ccare		MD		MMEx ¹	
Counted as a Visit Type for reporting								
	nKPI	OSR	nKPI	OSR	nKPI	OSR	nKPI	OSR
Home visit consultation	✓	✓	✓	✓	✓	✓	N/A	N/A
Hostel	✘	✓	N/A	N/A	N/A	N/A	N/A	N/A
Locum service	✓	✓	N/A	N/A	✓	✓	N/A	N/A
Nursing home consultation	N/A	N/A	✓	✓	✓	✓	N/A	N/A
RACF (residential aged care facility)	✓	✓	✓	✓	N/A	N/A	N/A	N/A
Surgery consultation	✓	✓	✓	✓	✓	✓	✓	✓
Telehealth (clinical)	✓	✓	✓	✓	✓	✓	N/A	N/A
Not counted as a Visit Type for reporting								
Email	✓	✓	N/A	N/A	✓	✘	N/A	N/A
Hospital consultation	✓	✘	✘	✘	✓	✘	N/A	N/A
Non-visit	✓	✓	N/A	N/A	N/A	N/A	N/A	N/A
Out of office	✓	✘	N/A	N/A	N/A	N/A	N/A	N/A
Practice admin	N/A	N/A	✓	✓	✓	✘	✓	✓
SMS	✓	✓	N/A	N/A	✓	✘	N/A	N/A
Telephone (non-clinical)	✓	✘	✘	✘	✓	✘	N/A	N/A
Other	✓	✓	✘	✘	✓	✘	✘	✘

1. MMEx is installed with 3 pre-configured Visit Types: 'Surgery', 'Admin' and 'Other' as shown above. Additional visit types can be added by the organisation and flagged as 'consultational' (for inclusion in reports) or 'non-consultational' (for exclusion from reports).