

# Package ‘clinify’

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**Title** Clinical Table Styling Tools and Utilities

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## Description

The primary motivation of this package is to take the things that are great about the R packages 'flextable' <<https://davidgohe1.github.io/flextable/>> and 'officer' <<https://davidgohe1.github.io/officer/>>, take the standard and complex pieces of formatting clinical tables for regulatory use, and simplify the tedious pieces.

**License** Apache License (>= 2)

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as_clintable	<i>Convert a flextable into a clintable object</i>
--------------	--

---

### Description

Convert a flextable into a clintable object

### Usage

```
as_clintable(x, page_by = NULL, group_by = NULL)
```

### Arguments

x	A flextable object
page_by	A variable in the input dataframe to use for pagination
group_by	A variable which will be used for grouping and attached as a label above the table headers

### Value

A clintable object

**Examples**

```
ft <- flextable::flextable(mtcars)
as_clintable(ft)
```

---

clindoc	<i>Create a clindoc object</i>
---------	--------------------------------

---

**Description**

These functions handle the conversion of a clintable object into a clindoc object.

**Usage**

```
clindoc(...)
as_clindoc(x)
```

**Arguments**

```
...      clintable objects to be converted. Or separately, a list of clintable objects
x        A clintable object to be converted.
```

**Details**

- `as_clindoc()` is intended for a single clintable object and extracts all necessary title and footnote information to apply to the document
- `clindoc()` can accept clintable objects as separate parameters or as a list of clintable objects. If a single clintable is passed, this function simply calls `as_clindoc()` internally.

When a multiple clintable objects are passed to `clindoc()`, titles and footnotes should be applied directly to the clindoc object using `clin_add_title()`, `clin_add_footnote()`, or `clin_add_footnote_page()`. Title and footnote information on the individual clintable objects will be ignored.

**Value**

a clindoc object, inherited from an `officer::rdocx` object

**Examples**

```
ct <- clintable(mtcars)
clindoc(ct)
```

---

`clinify_titles_default`*Apply Default Clinical Styling to Clintables*

---

**Description**

These functions apply default styling to clintable objects used for clinical tables, including titles and footnotes. The styling includes removing borders, setting font properties, and adjusting table width, line spacing, and padding.

**Usage**

```
clinify_titles_default(x, ...)  
clinify_footnotes_default(x, ...)  
clinify_table_default(x, ...)  
clinify_caption_default(x, ...)  
clinify_grouplabel_default(x, ...)  
clinify_docx_default()
```

**Arguments**

<code>x</code>	A clintable object representing the table (title or footnote).
<code>...</code>	Additional arguments (currently unused).

**Value**

A clintable object with the applied styling.

**Examples**

```
op <- options()  
  
sect <- clinify_docx_default()  
  
# Save out options to grab defaults  
options(  
  clinify_docx_default = sect,  
  clinify_titles_default = clinify_titles_default,  
  clinify_footnotes_default = clinify_footnotes_default,  
  clinify_table_default = clinify_table_default,  
  clinify_caption_default = clinify_caption_default,  
  clinify_grouplabel_default = clinify_grouplabel_default  
)
```

```
options(op)
```

---

clintable	<i>Create a new clintable object</i>
-----------	--------------------------------------

---

### Description

A clintable object directly inherits from a flextable object. This function will pass all necessary parameters `flextable::flextable()` and convert the object to a clintable

### Usage

```
clintable(x, page_by = NULL, group_by = NULL, use_labels = TRUE, ...)
```

### Arguments

x	A data frame
page_by	A variable in the input dataframe to use for pagination
group_by	A character vector of variable names which will be used for grouping and attached as a label above the table headers
use_labels	Use variable labels as column headers. Nested levels can be achieved using the string "  " as a delimiter. Horizontal and vertical levels using identical words will be merged.
...	Parameters to pass to <code>flextable::flextable()</code>

### Value

A clintable object

### Examples

```
clintable(mtcars)
```

---

clin\_add\_titles      *Add titles, footnotes, or a footnote page to a clintable or clindoc*

---

### Description

This function allows you to attach specified titles, footnotes, or a footnote page into clintable or clindoc object. The input can be provided either as a list of character vectors, or pre-built flextable.

### Usage

```
clin_add_titles(x, ls = NULL, ft = NULL)

clin_add_footnotes(x, ls = NULL, ft = NULL)

clin_add_footnote_page(x, ls = NULL, ft = NULL)
```

### Arguments

x	a clintable object
ls	a list of character vectors, no more than 2 elements to a vector
ft	A flextable object to use as the header

### Details

When using the ls parameter, each element of the list can contain no more than two elements within each character vector. In a title, a single element will align center. In a footnote, a single element will align to the left. For both titles and footnotes, two elements will align split down the middle, with the left side element aligning left and the right side element aligning right. In a title, a single left aligned element, provide a 2 element character vector with duplicate values.

### Value

A clintable object

### Examples

```
clintable(mtcars) |>
  clin_add_titles(
    list(
      c("Left", "Right"),
      c("Just the middle")
    )
  ) |>
  clin_add_footnotes(
    list(
      c(
        "Here's a footnote.",
        format(Sys.time(), "%H:%M %A, %B %d, %Y")
      )
    )
  )
```

```
    )
  )
) |>
clin_add_footnote_page(
  list(
    c(
      "Use when you have a lot of footnotes",
      "And you don't want to put them on every page"
    )
  )
)
```

---

`clin_alt_pages`*Configure alternating pages during pagination of a clintable*

---

### Description

This function configures alternating pages on a clintable object.

### Usage

```
clin_alt_pages(x, key_cols, col_groups)
```

### Arguments

<code>x</code>	A clintable object
<code>key_cols</code>	A character vector of variable names
<code>col_groups</code>	A list of character vectors of variable names

### Value

A clintable object

### Examples

```
ct <- clintable(mtcars)

clin_alt_pages(
  ct,
  key_cols = c("mpg", "cyl", "hp"),
  col_groups = list(
    c("disp", "drat", "wt"),
    c("qsec", "vs", "am"),
    c("gear", "carb")
  )
)
```

---

clin_auto_page	<i>Enable Word Auto-Pagination Using Group Variable</i>
----------------	---

---

## Description

This function uses the applies the functionality `flextable::keep_with_next()` by automatically building the row indices using some grouping variable. Each group identified by the variable (i.e. when the value of the variable changes) will be set as a "keep\_with\_next" group in Word. Using this functionality, Word will attempt not to break that group across pages, enabling smoother pagination without having to do specific calculations of page breaks.

## Usage

```
clin_auto_page(x, group_var, when = c("change", "notempty"), drop = FALSE)
```

## Arguments

x	A clintable object
group_var	A string containing a variable name of the input dataset used to calculate groups
when	Character string indicating when to apply padding: <ul style="list-style-type: none"> <li>"notempty": Find allowable break points when the value in group_var is not empty.</li> <li>"change": Find allowable break points when the value in group_var changes from the previous row.</li> </ul>
drop	Keep or drop the 'group_var' variable

## Value

A clintable object

## Examples

```
clintable(mtcars) |>
  clin_auto_page("gear")
```

---

clin\_column\_headers    *Set the column headers of the output clintable*

---

## Description

This function allows you to apply column headers named arguments and character vectors. Separate elements of the character vector are converted to separate levels of the output table header. The in which the headers are applied goes from top to bottom, so if you provide 3 elements for a column header, the first element is applied to the top and the second to the bottom. If one variable has three levels and other variable only have one or two, the columns with less levels to the header will bind to the bottom. So a column with two levels will apply to the second and third row, and a column with one level with apply the bottom row. Spanners are determined using cells of the same text value, where horizontal and vertical merging is performed.

## Usage

```
clin_column_headers(x, ...)
```

## Arguments

x	A clintable object
...	Named arguments providing the column header text. Separate levels of the header are determined using separate elements of a character vector.

## Details

The same result can be achieved using column labels on the input dataframe to the clintable. If labels are present, header levels will be separated using the delimiter "||" within the label string.

## Value

A clintable object

## Examples

```
clintable(iris) |>
  clin_column_headers(
    Sepal.Length = c("Flowers", "Sepal", "Length"),
    Sepal.Width = c("Flowers", "Sepal", "Width"),
    Petal.Length = c("Petal", "Length"),
    Petal.Width = c("Petal", "Width")
  )
```

---

clin_col_widths	<i>Set column widths using percent</i>
-----------------	--

---

**Description**

Extraction of flextable print method with special handling of clintable pages and

**Usage**

```
clin_col_widths(x, ...)
```

**Arguments**

x	A clintable object
...	Named parameters where the names are columns in the flextable and the values are decimals representing the percent of total width of the table

**Value**

A clintable object

**Examples**

```
ct <- clintable(mtcars)

ct <- clin_alt_pages(
  ct,
  key_cols = c("mpg", "cyl", "hp"),
  col_groups = list(
    c("disp", "drat", "wt"),
    c("qsec", "vs", "am"),
    c("gear", "carb")
  )
) |>
  clin_col_widths(mpg = .2, cyl = .2, disp = .15, vs = .15)

print(ct)
```

---

clin\_default\_table\_width

*Get the Default Table Width for Clinical Documents*

---

**Description**

This function calculates the default table width based on the page width and margins specified in the `clinify_docx_default` option.

**Usage**

```
clin_default_table_width()
```

**Value**

An rdocx object from the officer package

**Examples**

```
clin_default_table_width()
```

---

clin_group_by	<i>Configure a clintable to table by a grouping variable, which will be used as a label</i>
---------------	---

---

**Description**

Configure a clintable to table by a grouping variable, which will be used as a label

**Usage**

```
clin_group_by(x, group_by, caption_by = NULL, when = c("change", "notempty"))
```

**Arguments**

x	A clintable object
group_by	A character vector of variable names which will be used for grouping and attached as a label above the table headers
caption_by	A single element string of a variable name which will be used as a caption attached below the table body and above in the footer. Defaults to NULL.
when	Character string indicating how to identify groups and captions: <ul style="list-style-type: none"> <li>• "change": Add padding when the value in group_by or caption_by changes from the previous row.</li> <li>• "notempty": Add padding when the value in group_by or caption_by is not empty.</li> </ul>

**Value**

A clintable object

**Examples**

```
clintable(iris) |>
  clin_group_by("Species")
```

---

`clin_group_pad`*Add Padding Between Groups in a Clinical Flextable*

---

## Description

Adds top padding to rows in a ‘clintable‘ based on changes in a grouping variable or non-empty values. Useful for visually separating groups in a table

## Usage

```
clin_group_pad(  
  x,  
  pad_by,  
  size = 9,  
  when = c("change", "notempty"),  
  drop = FALSE  
)
```

## Arguments

<code>x</code>	A clintable
<code>pad_by</code>	A string indicating the column name used to detect group changes.
<code>size</code>	Numeric value for the base padding size (default is 9).
<code>when</code>	Character string indicating when to apply padding: <ul style="list-style-type: none"><li>• "notempty": Add padding when the value in <code>pad_by</code> is not empty.</li><li>• "change": Add padding when the value in <code>pad_by</code> changes from the previous row.</li></ul>
<code>drop</code>	Keep or drop the padding variable used to identify padding locations

## Value

A clintable object with modified padding.

## Examples

```
ct <- clintable(mtcars) |>  
  clin_group_pad('gear')  
  
ct <- clintable(mtcars) |>  
  clin_group_pad('gear', size = 15)
```

---

clin_page_by	<i>Configure pagination using a page variable</i>
--------------	---

---

**Description**

Configure pagination using a page variable

**Usage**

```
clin_page_by(x, page_by, max_rows = 10)
```

**Arguments**

x	A clintable object
page_by	A variable in the input dataframe to use for pagination
max_rows	If no page_by, the maximum rows allowed per page

**Value**

A clintable object

**Examples**

```
dat <- mtcars
dat["page"] <- c(
  rep(1, 10),
  rep(2, 10),
  rep(3, 10),
  c(4, 4)
)

clintable(dat) |>
  clin_page_by("page")

clintable(mtcars) |>
  clin_page_by(max_rows = 10)
```

---

clin_replace_pagenums	<i>Replace Table Cells with Word Page Number Fields</i>
-----------------------	---

---

**Description**

This helper function will find placeholder text and replace the fields of the flextable object with the appropriate page number fields. The function will search for the text {PAGE} and replace with the word field for current pages, and {NUMPAGES} for total pages. This allows you to current and total page fields within Word documents. Note that this is intended to be used in the defaults for clinify\_titles\_default or clinify\_footnotes\_default.

**Usage**

```
clin_replace_pagenums(x)
```

**Arguments**

x                    A clintable object

**Value**

A clintable object

**Examples**

```
title <- new_title_footnote(  
  list(  
    # We'll add tools to automate paging  
    c("Protocol: CDISCPIL0T01", "Page {PAGE} of {NUMPAGES}"),  
    c("Table 14-2.01"),  
    c("Summary of Demographic and Baseline Characteristics")  
  ),  
  "titles"  
)  
  
title <- clin_replace_pagenums(title)  
  
footnote <- new_title_footnote(  
  list(  
    # We'll add tools to automate paging  
    c("Page {PAGE}", "Total Pages: {NUMPAGES}")  
  ),  
  "footnotes"  
)  
  
footnote <- clin_replace_pagenums(footnote)
```

---

make\_grouped\_pagenums *Assign Page Numbers to Presorted Grouped Data*

---

**Description**

Assigns sequential page numbers to elements of a vector, grouping by unique values and allocating a specified number of rows per page. The input vector must be presorted by group.

**Usage**

```
make_grouped_pagenums(var, rows)
```

**Arguments**

`var` A vector of group labels, presorted so that identical values are contiguous.

`rows` Integer. The maximum number of rows per page.

**Details**

The function splits the input vector into groups, then assigns page numbers within each group so that each page contains up to ‘rows‘ items. Page numbers increment sequentially across groups. If the input is not presorted by group, the function will throw an error.

**Value**

An integer vector of the same length as ‘var‘, indicating the assigned page number for each element.

**Examples**

```
library(dplyr)
iris |>
  mutate(
    page = make_grouped_pagenums(Species, 5)
  )
```

---

`new_title_footnote` *Create a new title or footnote flextable*

---

**Description**

Create a new title or footnote flextable

**Usage**

```
new_title_footnote(x, sect = c("titles", "footnotes", "footnote_page"))
```

**Arguments**

`x` a list of character vectors, no more than 3 elements to a vector.

`sect` Either "titles" or "footnotes"

**Value**

A flextable object

**Examples**

```

title <- new_title_footnote(
  list(
    # We'll add tools to automate paging
    c("Protocol: CDISCILOT01", "Page {PAGE} of {NUMPAGES}"),
    c("Table 14-2.01"),
    c("Summary of Demographic and Baseline Characteristics")
  ),
  "titles"
)

footnote <- new_title_footnote(
  list(
    # We'll add tools to automate paging
    c("Page {PAGE}", "Total Pages: {NUMPAGES}")
  ),
  "footnotes"
)

```

---

print.clintable	<i>Clintable print method</i>
-----------------	-------------------------------

---

**Description**

Extraction of flextable print method with special handling of clintable pages and

**Usage**

```

## S3 method for class 'clintable'
print(x, n = 3, nrows = 15, apply_defaults = TRUE, ...)

## S3 method for class 'clintable'
knit_print(x, n = 3, nrows = 15, apply_defaults = TRUE, ...)

```

**Arguments**

x	A clintable object
n	Number of pages within the clintable to print. Only used when pagination is configured
nrows	Number of rows to print. Only used when rows aren't configured within the pagination method
apply_defaults	Apply default styles. These styles are stored in the options <code>clinify_header_default</code> , <code>clinify_footer_default</code> , and <code>clinify_table_default</code> respectively. Defaults to true.
...	Additional parameters passed to flextable print method

**Value**

Invisible

**Examples**

```
ct <- clintable(mtcars)

print(ct)

ct <- clin_alt_pages(
  ct,
  key_cols = c("mpg", "cyl", "hp"),
  col_groups = list(
    c("disp", "drat", "wt"),
    c("qsec", "vs", "am"),
    c("gear", "carb")
  )
)

print(ct)
```

---

write\_clindoc

*Clintable write method*

---

**Description**

Write a clinify table out to a docx file

**Usage**

```
write_clindoc(x, file)
```

**Arguments**

x                    a clintable object

file                 The file path to which the file should be written

**Value**

Invisible

**Examples**

```
ct <- clintable(mtcars)

ct <- clin_alt_pages(
  ct,
  key_cols = c("mpg", "cyl", "hp"),
  col_groups = list(
    c("disp", "drat", "wt"),
    c("qsec", "vs", "am"),
    c("gear", "carb")
  )
)

# Get document object directly
doc <- clindoc(ct)

# Write out docx file
write_clindoc(ct, file.path(tempdir(), "demo.docx"))
```

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