Digital Book Production

Standardization is Key

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Challenges

- Meeting market needs for electronic products.
- Creating designs that provide high-quality print books and high-quality electronic products.
- Understanding the relationship between design and platform rendering.
- Acknowledging the limitations of e-workflows.
- Recognizing that content needs to be available in numerous file formats.
- Increasing efficiency to make content quickly available to markets.

Design is Critical

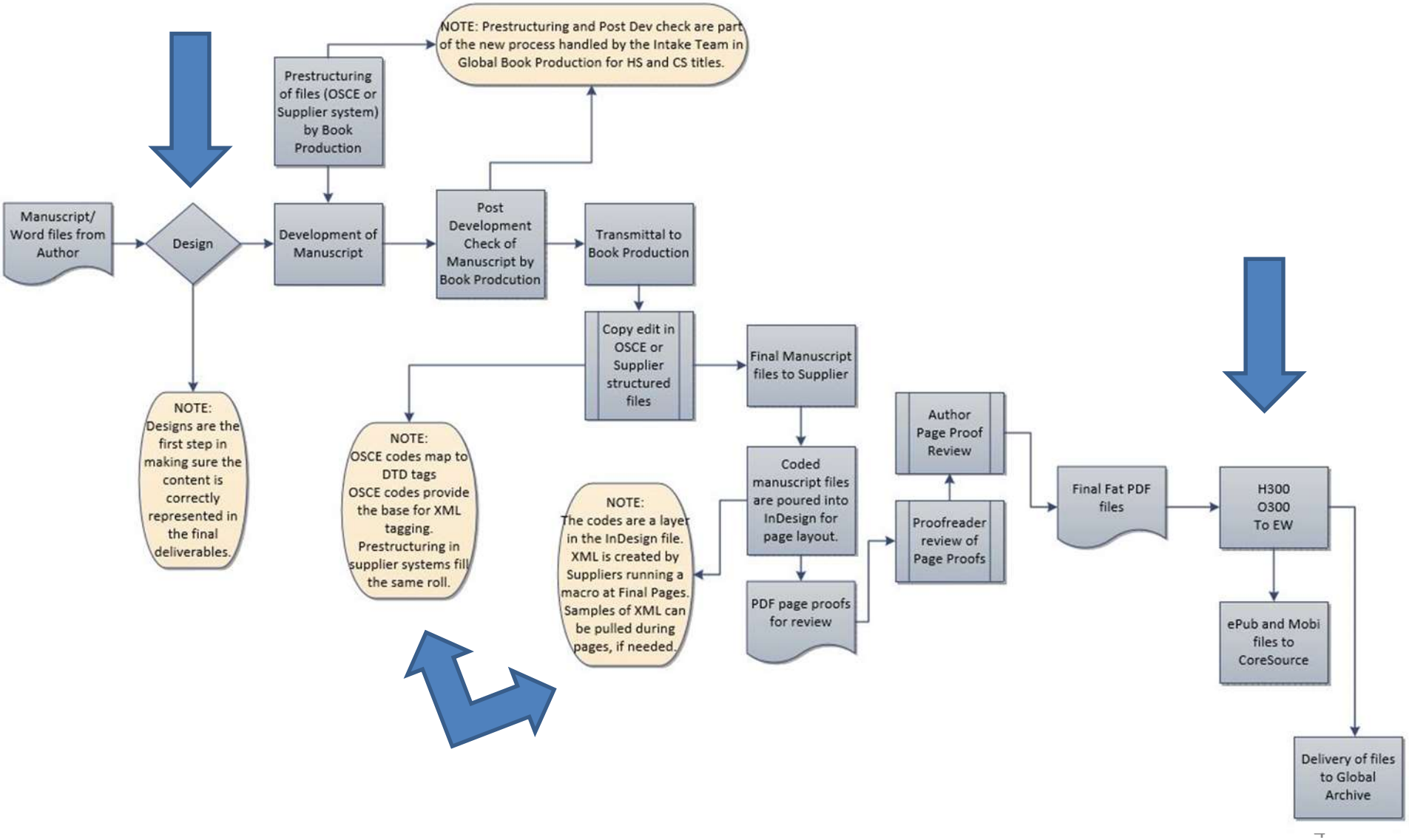
Need to find a balanced aesthetic solution for print to electronic.

- The design process needs to be linked directly to the development of content and incorporate *all* elements.
- The challenge is to create a design that will carry through to the EPUB and Mobi files to give the best viewing experience on all readers.
- It is important to consistently style elements (headings, boxes, tables) so they will render the same when the CSS is applied.
- The CSS (Cascading Style Sheet) controls the aesthetics and how the content will render in the eBook and on platforms.

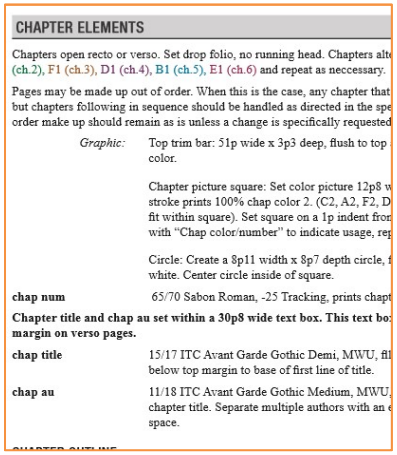
eBook limitations for designing content must be considered to retain the overall style structure for digital formats. Limitations include:

- Content being displayed in single column format.
- Content is reflowable based on device and user settings.
- End users choosing font and adjusting size of font on readers.

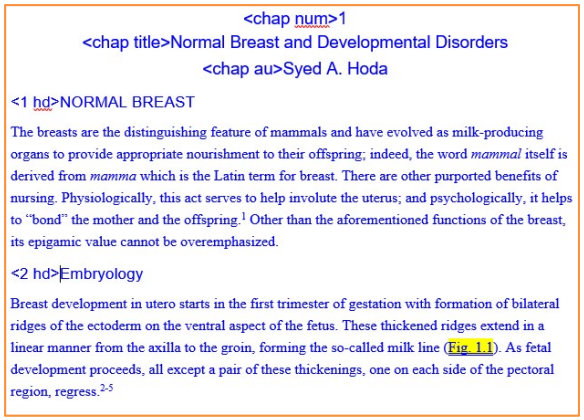
High-Level Production Workflow



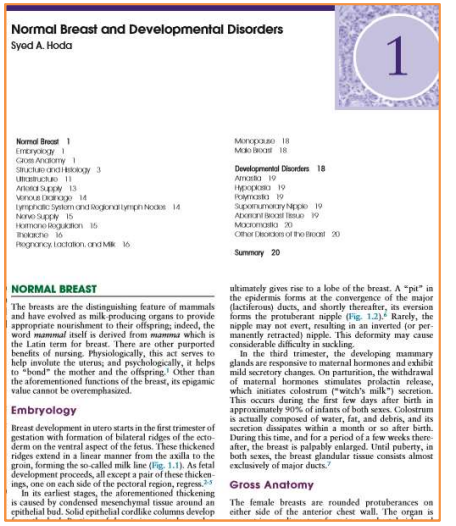
Pathway to XML and ePub



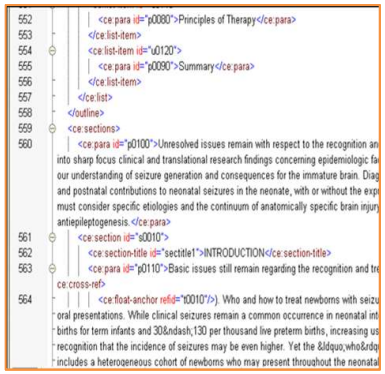
Design



Manuscript



PDF page proof



XML

ePub

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Print-Only, Shared, and E-Only Content

Print-Only Content

- Content is coded in the XML
- Appears only in the printed version

Shared Content

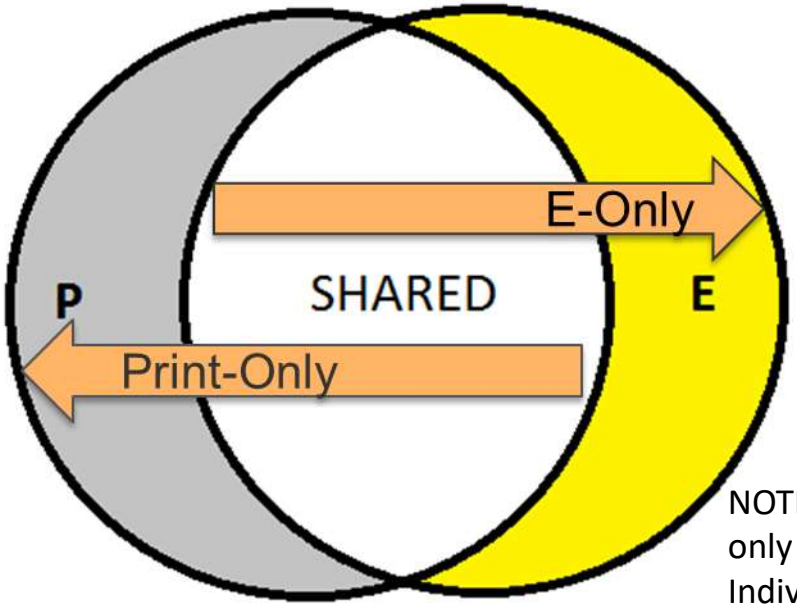
- Content is coded in the XML
- Appears in both print and electronic versions

E-Only Content

- Content is coded in the XML
- Appears only in electronic versions, such as eBook/ePub and on platforms

"Supplemental" Files

- Content is not coded in the XML
- It will not appear in most electronic versions, such as ePub/eBook or on most platforms
- ScienceDirect and ExpertConsult can display files

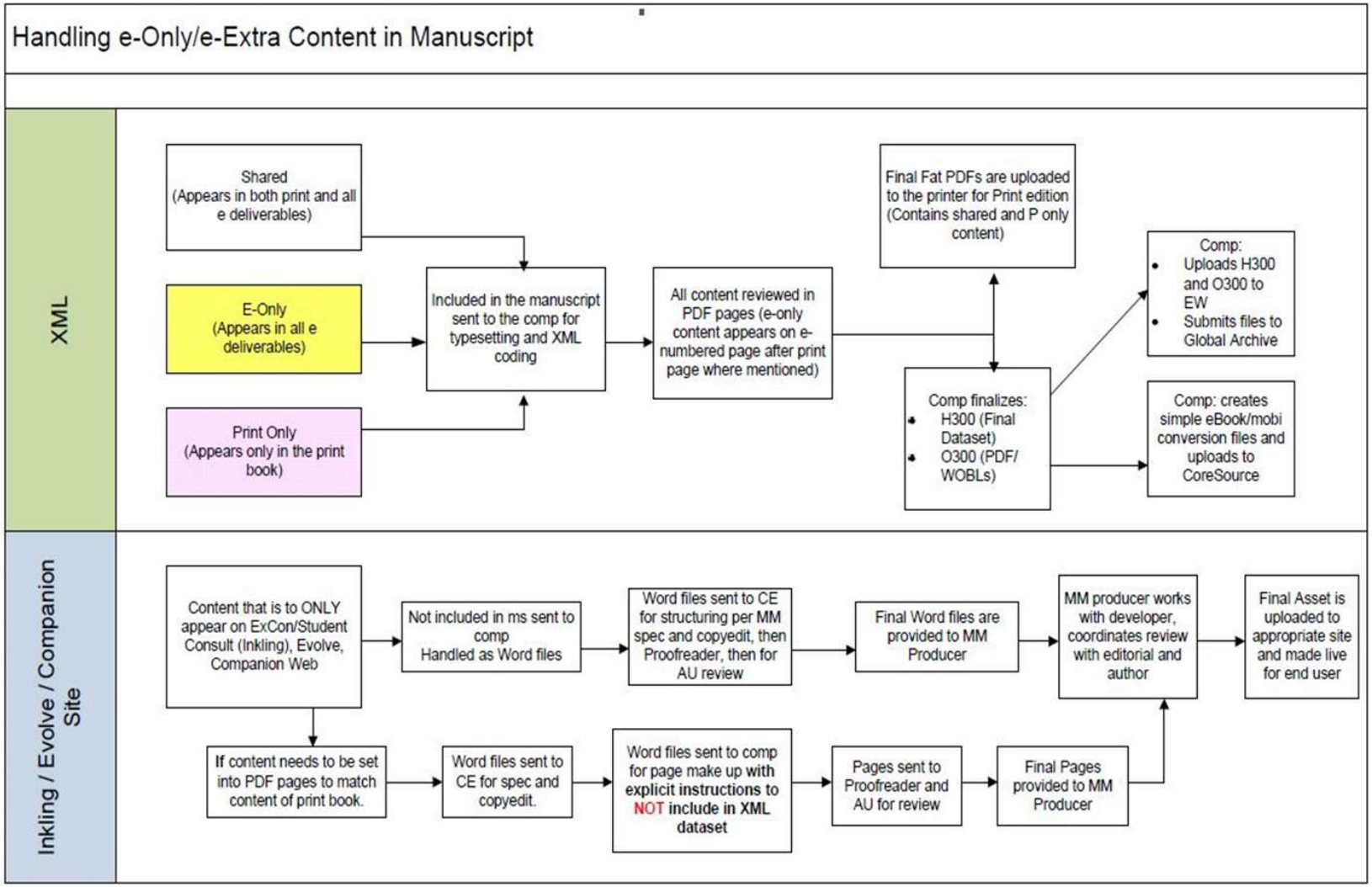


NOTE: The smallest item for print-only or e-only is a paragraph. Individual sentences within a paragraph cannot have an attribute different than the entire paragraph. (There can be a one sentence paragraph…)

Example of Supplemental Content

Interactive map available on ScienceDirect.
Users can click on each point to access additional information regarding that location.

Other examples are very large tables in Excel that would not render well in the print or electronic layout.



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XML

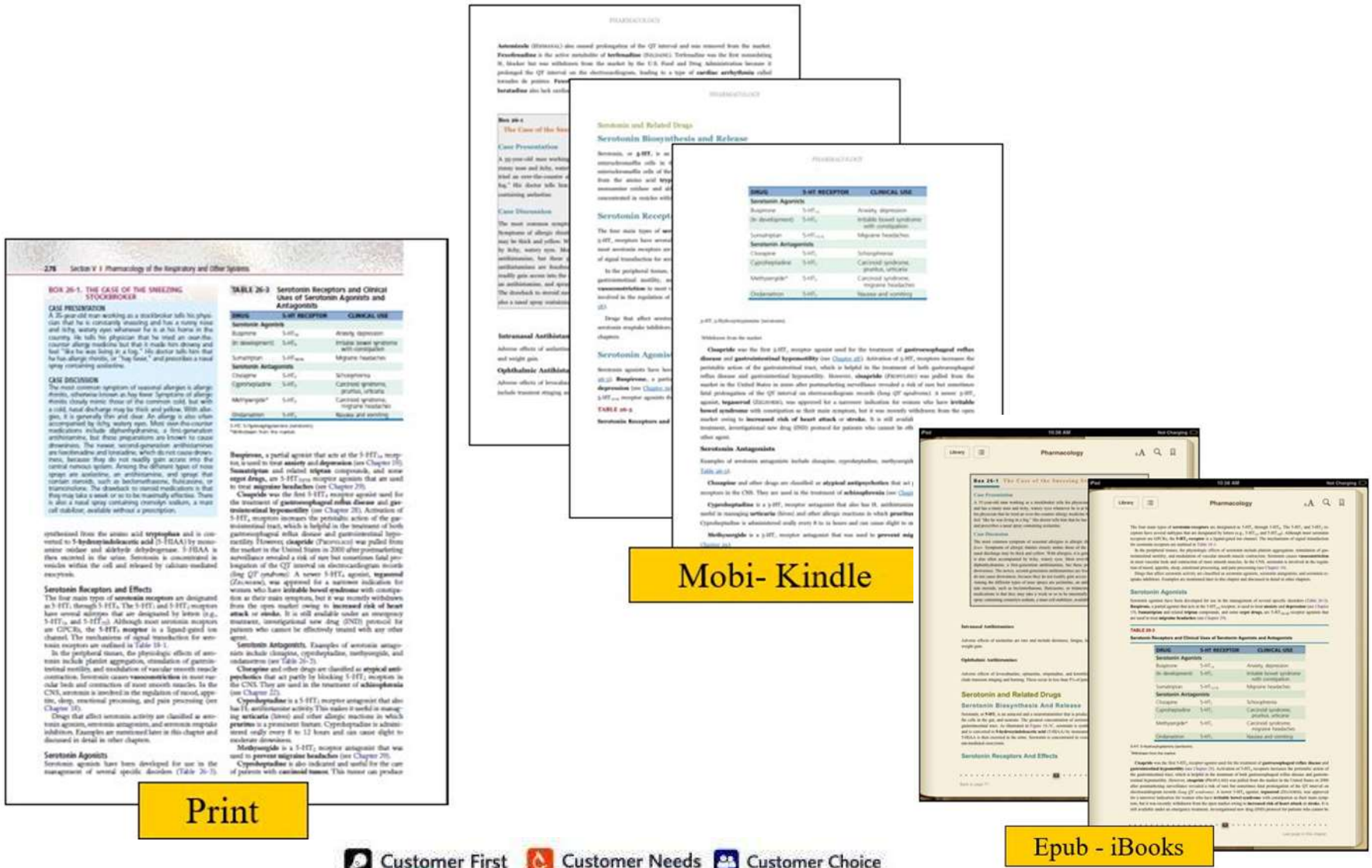
What information does the XML carry?

- Limited Styling – only bold, italic, cross out, underline, small caps, sub/superscript
- Fonts – serif, sanserif or monospace
- Punctuation
- Hierarchy
- Downstream versioning (e-only, p-only, shared content)

What information does XML **not** carry?

- Color
- Font size
- Particular fonts (for example: Times, Arial, Helvetica, etc.)
- Highlighting
- Positioning – left, right, center, justified

Print versus eBooks



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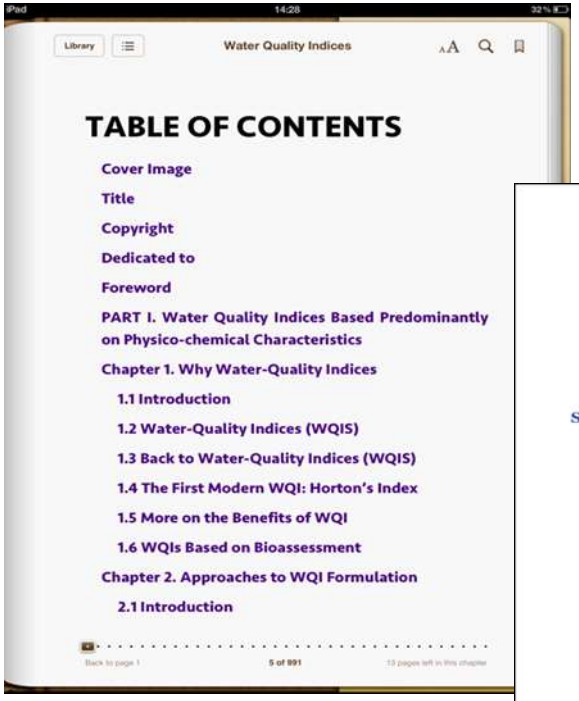
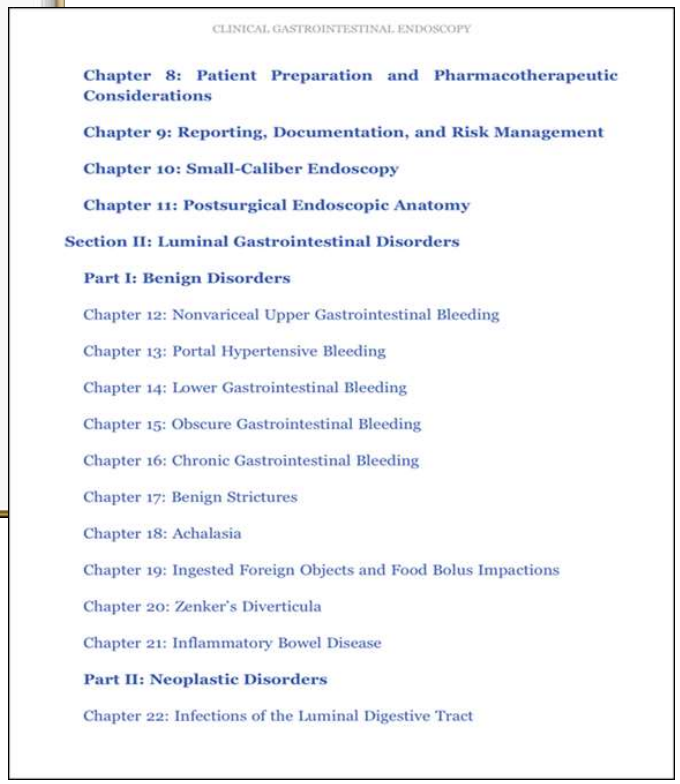
Electronic Table of Contents

The table of contents in an eBook is generated from the XML hub file. Thus there are no page numbers.

Instead the chapter title is hyperlinked and will take the user directly to the location in the file.





To maintain the hierarchy of the table of contents, make sure the content is consistently set up throughout the title.

Example of Part Opener

SECTION 3 DRUGS AFFECTING MAJOR ORGAN SYSTEMS

21 The heart

OVERVIEW

In this chapter, we review briefly the physiology of cardiac function in terms of electrophysiology, of contraction, of oxygen consumption and coronary blood flow, of autonomic control and as a source of peptide hormones. This provides a basis for understanding effects of drugs on the heart and their place in treating cardiac disease. The main drugs considered are drugs that act directly on the heart, namely antidysrhythmic drugs and drugs that increase the force of contraction of the heart (especially digoxin); antianginal drugs are also covered in this chapter. The commonest forms of heart disease are caused by atheroma in the coronary arteries, and thrombosis on ruptured atheromatous plaques; drugs to treat and prevent these are considered in Chapters 23 and 24. Heart failure is mainly treated by drugs that work indirectly on the heart via actions on vascular smooth muscle, discussed in Chapter 22, by diuretics (Ch. 28) and β-adrenoceptor antagonists (Ch. 14).

INTRODUCTION

In this chapter, we consider effects of drugs on the heart under three main headings:

1. Rate and rhythm.
2. Myocardial contraction.
3. Metabolism and blood flow.

The effects of drugs on these aspects of cardiac function are not, of course, independent of each other. For example, if a drug affects the electrical properties of the myocardial cell membrane, it is likely to influence both cardiac rhythm and myocardial contraction. Similarly, a drug that affects contraction will inevitably alter metabolism and blood flow as well. Nevertheless, from a therapeutic point of view, these three classes of effect represent distinct clinical objectives in relation to the treatment, respectively, of cardiac dysrhythmias, cardiac failure and coronary insufficiency (as occurs during angina pectoris or myocardial infarction).

PHYSIOLOGY OF CARDIAC FUNCTION

CARDIAC RATE AND RHYTHM

The chambers of the heart normally contract in a coordinated manner, pumping blood efficiently by a route determined by the valves. Coordination of contraction is achieved by a specialised conducting system. Physiological sinus rhythm is characterised by impulses arising in the sinoatrial (SA) node and conducted in sequence through the atria, the atrioventricular (AV) node, bundle of His, Purkinje fibres and ventricles. Cardiac cells owe their electrical excitability to voltage-sensitive plasma membrane channels selective for various ions, including Na^+, K^+ and Ca^{2+}, the structure and function of which are described in Chapter 4. Electrophysiological features of cardiac muscle that distinguish it from other excitable tissues include:

- pacemaker activity
- absence of fast Na^+ current in SA and AV nodes, where slow inward Ca^{2+} current initiates action potentials
- long action potential ('plateau') and refractory period
- influx of Ca^{2+} during the plateau.

Thus several of the special features of cardiac rhythm relate to Ca^{2+} currents. The heart contains intracellular calcium channels (i.e. ryanodine receptors and inositol trisphosphate-activated calcium channels described in Ch. 4, which are important in myocardial contraction) and voltage-dependent calcium channels in the plasma membrane, which are important in controlling cardiac rate and rhythm. The main type of voltage-dependent calcium channel in adult working myocardium is the L-type channel, which is also important in vascular smooth muscle; L-type channels are important in specialised conducting regions as well as in working myocardium.

The action potential of an idealised cardiac muscle cell is shown in Figure 21.1A and is divided into five phases: 0 (fast depolarisation), 1 (partial repolarisation), 2 (plateau), 3 (repolarisation) and 4 (pacemaker).

▼ Ionic mechanisms underlying these phases can be summarised as follows.

Phase 0, rapid depolarisation, occurs when the membrane potential reaches a critical firing threshold (about −60 mV), at which the inward current of Na^+ flowing through the voltage-dependent sodium channels becomes large enough to produce a regenerative ('all-or-nothing') depolarisation. This mechanism is the same as that responsible for action potential generation in neurons (see Ch. 6). Activation of sodium channels by membrane depolarisation is transient, and if the membrane remains depolarised for more than a few milliseconds, they close again (inactivation). They are therefore closed during the plateau of the action potential and remain unavailable for the initiation of another action potential until the membrane repolarises.

Phase 1, partial repolarisation, occurs as the Na^+ current is inactivated. There may also be a transient voltage-sensitive outward current.

Phase 2, the plateau, results from an inward Ca^{2+} current. Calcium channels show a pattern of voltage-sensitive activation and inactivation qualitatively similar to sodium channels, but with a much slower time course. The plateau is assisted by a special property of the cardiac muscle membrane known as inward-going rectification, which means that the K^+ conductance falls to a low level when the membrane is depolarised. Because of this, there is little tendency for outward K^+ current to restore the resting membrane potential during the plateau, so a relatively small inward Ca^{2+} current suffices to maintain the plateau.

Phase 3, repolarisation, occurs as the Ca^{2+} current inactivates and a delayed outwardly rectifying K^+ current (analogous to, but much slower than, the K^+ current that causes repolarisation in nerve fibres, Ch. 6) activates, causing outward K^+ current. This is augmented by another K^+ current, which is activated by high intracellular Ca^{2+} concentrations, $[Ca^{2+}]_i$ during the plateau, and sometimes also by other K^+ currents, including one through channels activated by

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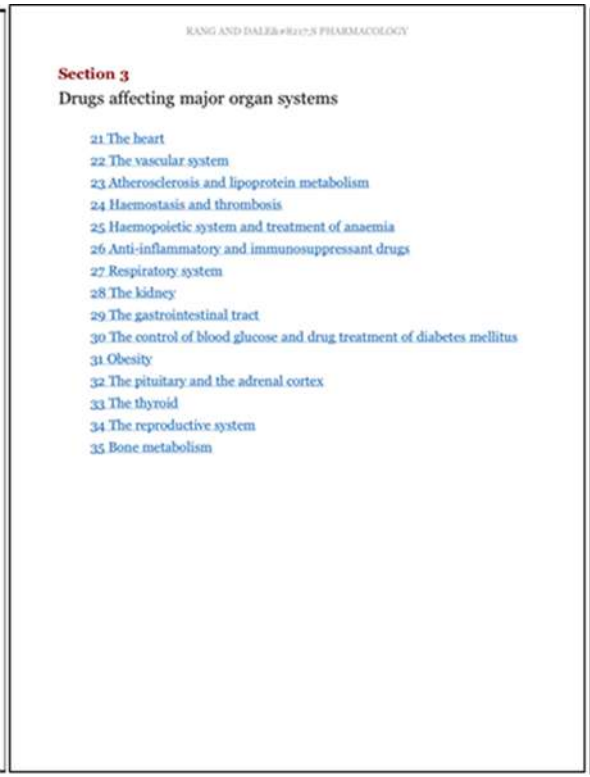
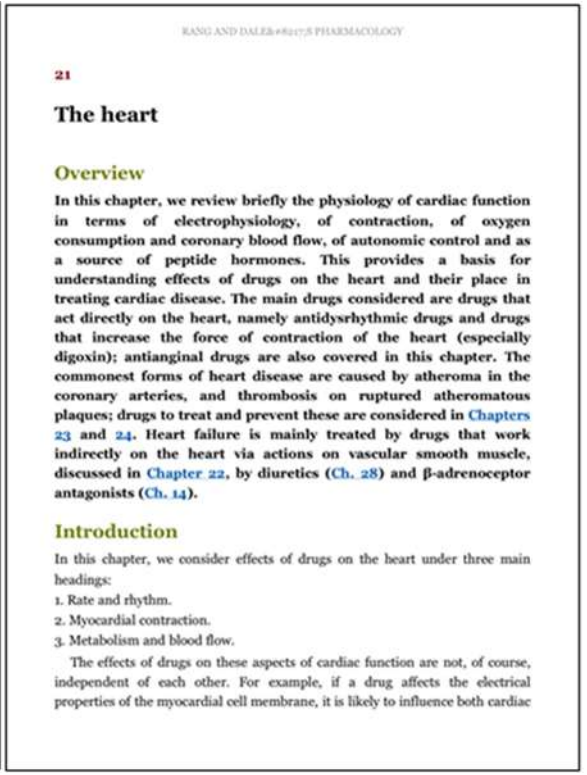
Print



RANG AND DALE'S PHARMACOLOGY

Section 3

Drugs affecting major organ systems



RANG AND DALE'S PHARMACOLOGY

21

The heart

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Electronic

eBook Types

ePub

- Universally recognized industry standard XML-based eBook format that enables compatibility across a wide range of eReader platforms, such as Apple, Google, Barnes & Noble, and KOBO.
- ePub is “reflowable” and flexible. Text automatically adjusts to the screen size of the reader and parameters set by the user (for example, font size).
- Current standard for ePub production is ePub3, which contains standard multimedia functionalities (audio and video).

Mobipocket

- Are XML based, making them reflowable and flexible.
- Files can only be read on specific operating devices, such as the Amazon Kindle.

WebPDF

- Lower resolution PDF version optimized for quick access on the Internet.
- Large, static files, which do not reflow.

PubXML

- Not a widely used format.
- 3PP requires the raw XML file, delivered in a Zip file. Then creates an eBook version for specific devices.

Digital Rights Management (DRM)

The standard approach for protecting digital files from illegal copying and piracy. DRM is a lock placed on the digital file that keeps the file connected to the account of the customer who purchased the digital file. DRM intends to control executing, viewing, copying, printing and altering of work or devices.

DRM in eBooks

In eBooks the DRM can be placed as a wrapper around the eBook file or as part of the eBook package. The DRM prevents the eBook from being opened on an eReader or device without the correct key provided by the retailer or publisher.

Currently there are four major DRM schemes being used:

Amazon: Applies their own DRM on Kindle eBooks purchased from Amazon websites.

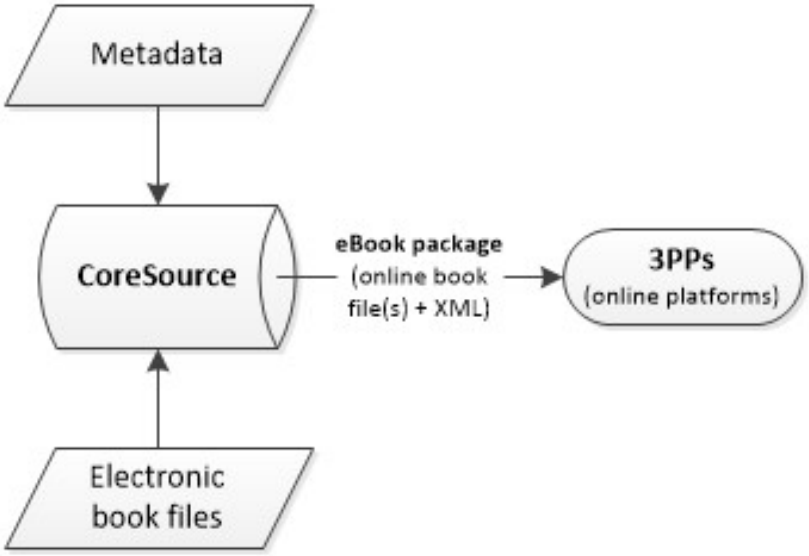
Apple: Applies their own FairPlay DRM on eBooks purchased from the iBookstore.

Adobe: Created the Adobe Digital Editions Protection Technology (ADEPT). It is currently used by a large number of retailers, including Barnes & Noble, Kobo, Ingram Fulfillment System. Use requires that Adobe Digital Editions be installed on the eReader or device.

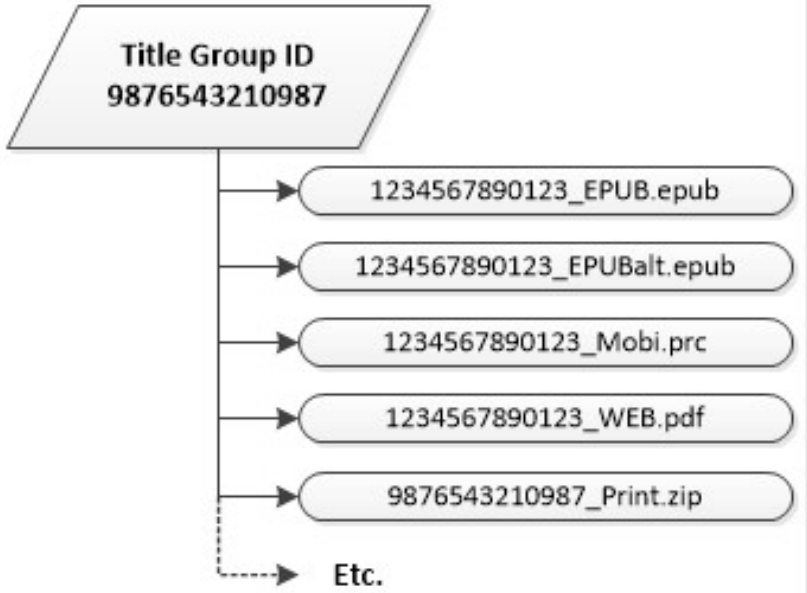
Marlin Trust Management Organization (MTMO): A DRM developed and maintained by the Marlin Developer Community (MDC), an open industry group founded by Intertrust, Panasonic, Philips, Samsung, and Sony. It is used in eBooks sold by KNO.

High-Level eBook Distribution

File Input to CoreSource



Storage of Files



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Thank you!

QUESTIONS?